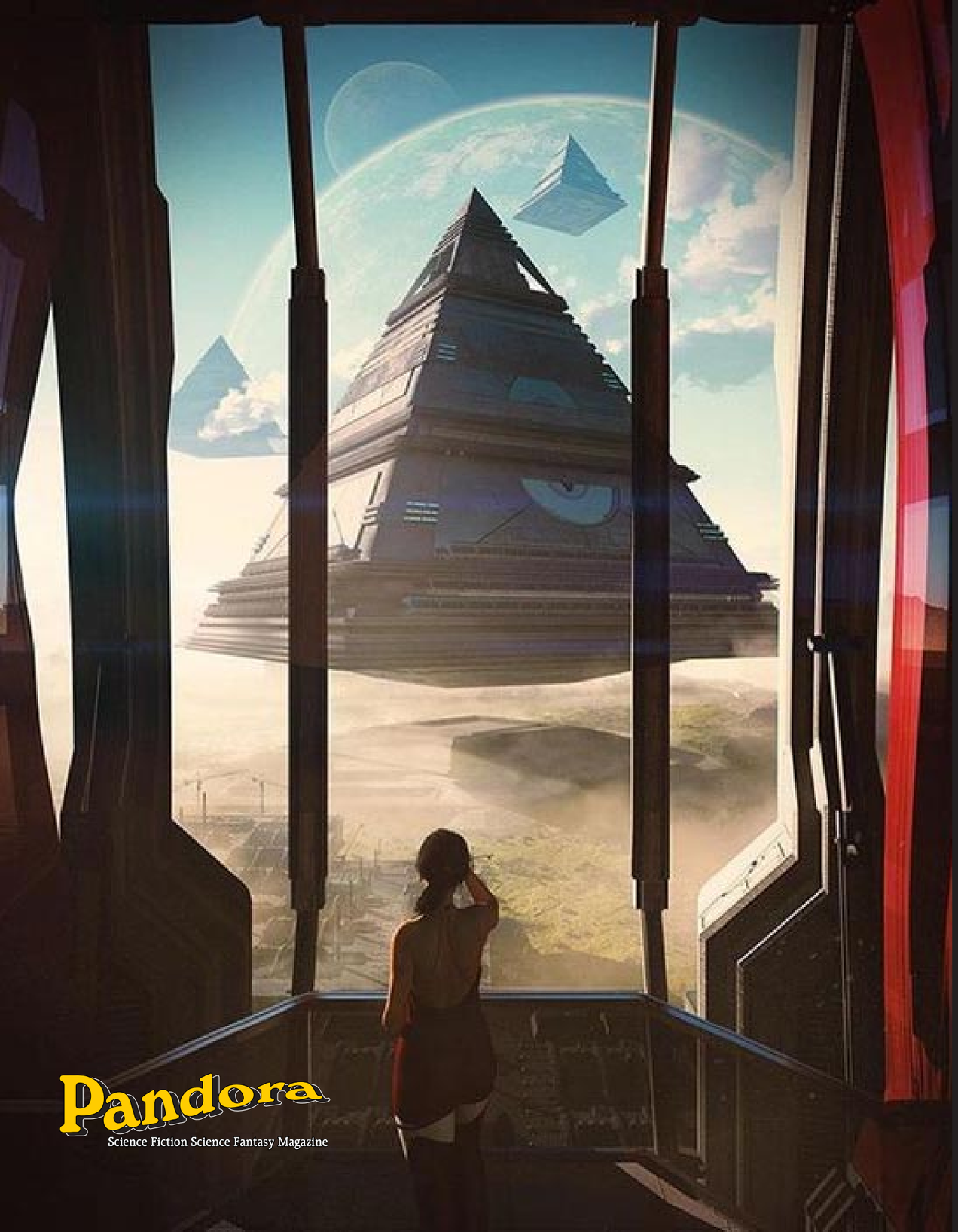

Pandora

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Science Fiction Science Fantasy Magazine

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NAUDSONCE

Bishop Berkeley's famous question about the sound of a falling tree may have no standing in Science. But there is a highly interesting question about "sound" that Science needs to consider....

The sun warmed Mark Howell's back pleasantly. Underfoot, the mosslike stuff was soft and yielding, and there was a fragrance in the air unlike anything he had ever smelled. He was going to like this planet; he knew it. The question was, how would it, and its people, like him? He watched the little figures advancing across the fields from the mound, with the village out of sight on the other end of it and the combat-car circling lazily on contragravity above.

Major Luis Gofredo, the Marine officer, spoke without lowering his binoculars:

"They have a tubular thing about twelve feet long; six of them are carrying it on poles, three to a side, and a couple more are walking behind it. Mark, do you think it could be a cannon?"

So far, he didn't know enough to have an opinion, and said so, adding:

"What I saw of the village in the screen from the car, it looked pretty primitive. Of course, gunpowder's one of those things a primitive people could discover by accident, if the ingredients were available."

"We won't take any chances, then."

"You think they're hostile? I was hoping they were coming out to parley with us."

That was Paul Meillard. He had a right to be anxious; his whole future in the Colonial Office would be made or ruined by what was going to happen here.

The joint Space Navy-Colonial Office expedition was looking for new planets suitable for colonization; they had been out, now, for four years, which was close to maximum for an exploring expedition. They had entered eleven systems, and made landings on eight planets. Three had been reasonably close to Terra-type. There had been Fafnir; conditions there would correspond to Terra during

the Cretaceous Period, but any Cretaceous dinosaur would have been cute and cuddly to the things on Fafnir. Then there had been Imhotep; in twenty or thirty thousand years, it would be a fine planet, but at present it was undergoing an extensive glaciation. And Irminsul, covered with forests of gigantic trees; it would have been fine except for the fauna, which was nasty, especially a race of subsapient near-humanoids who had just gotten as far as clubs and *coup-de-poing* axes. Contact with them had entailed heavy ammunition expenditure, with two men and a woman killed and a dozen injured. He'd had a limp, himself, for a while as a result.

As for the other five, one had been an all-out hell-planet, and the rest had been the sort that get colonized by irreconcilable minority-groups who want to get away from everybody else. The Colonial Office wouldn't even consider any of them.

Then they had found this one, third of a G0-star, eighty million miles from primary, less axial inclination than Terra, which would mean a more uniform year-round temperature, and about half land surface. On the evidence of a couple of sneak landings for specimens, the biochemistry was identical with Terra's and the organic matter was edible. It was the sort of planet every explorer dreams of finding, except for one thing.

It was inhabited by a sapient humanoid race, and some of them were civilized enough to put it in Class V, and Colonial Office doctrine on Class V planets was rigid. Friendly relations with the natives had to be established, and permission to settle had to be guaranteed in a treaty of some sort with somebody more or less authorized to make one.

If Paul Meillard could accomplish that, he had it made. He would stay on with forty or fifty of the ship's company to make preparations. In a year a couple of ships would come out from Terra, with a thousand colonists, and a battalion or so of Federation troops, to protect them from the natives and vice versa. Meillard would automatically be appointed governor-general.

But if he failed, he was through. Not out—just through. When he got back to Terra, he would be promoted to some home office position at slightly higher base pay but without the three hundred per cent extraterrestrial bonus, and he would vegetate there till he retired. Every time his name came up, somebody would say, "Oh, yes; he flubbed the contact on Whatzit."

It wouldn't do the rest of them any good, either. There would always be the suspicion that they had contributed to the failure.

Bwaaa-waaa-waaanh!

The wavering sound hung for an instant in the air. A few seconds later, it was repeated, then repeated again.

"Our cannon's a horn," Gofredo said. "I can't see how they're blowing it,

though.''

There was a stir to right and left, among the Marines deployed in a crescent line on either side of the contact team; a metallic clatter as weapons were checked. A shadow fell in front of them as a combat-car moved into position above.

''What do you suppose it means?'' Meillard wondered.

''Terrans, go home.'' He drew a frown from Meillard with the suggestion. ''Maybe it's supposed to intimidate us.''

''They're probably doing it to encourage themselves,'' Anna de Jong, the psychologist, said. ''I'll bet they're really scared stiff.''

''I see how they're blowing it,'' Gofredo said. ''The man who's walking behind it has a hand-bellows.'' He raised his voice. ''Fix bayonets! These people don't know anything about rifles, but they know what spears are. They have some of their own.''

So they had. The six who walked in the lead were unarmed, unless the thing one of them carried was a spear. So, it seemed, were the horn-bearers. Behind them, however, in an open-order skirmish-line, came fifty-odd with weapons. Most of them had spears, the points glinting redly. Bronze, with a high copper content. A few had bows. They came slowly; details became more plainly visible.

The leader wore a long yellow robe; the thing in his hand was a bronze-headed staff. Three of his companions also wore robes; the other two were bare-legged in short tunics. The horn-bearers wore either robes or tunics; the spearmen and bowmen behind either wore tunics or were naked except for breechclouts. All wore sandals. They were red-brown in color, completely hairless; they had long necks, almost chinless lower jaws, and fleshy, beaklike noses that gave them an avian appearance which was heightened by red crests, like roosters' combs, on the tops of their heads.

''Well, aren't they something to see?'' Lillian Ransby, the linguist asked.

''I wonder how we look to them,'' Paul Meillard said.

That was something to wonder about, too. The differences between one and another of the Terrans must puzzle them. Paul Meillard, as close to being a pure Negro as anybody in the Seventh Century of the Atomic Era was to being pure anything. Lillian Ransby, almost ash-blond. Major Gofredo, barely over the minimum Service height requirement; his name was Old Terran Spanish, but his ancestry must have been Polynesian, Amerind and Mongolian. Karl Dorver, the sociographer, six feet six, with red hair. Bennet Fayon, the biologist and physiologist, plump, pink-faced and balding. Willi Schallenmacher, with a bushy black beard....

They didn't have any ears, he noticed, and then he was taking stock of the things they wore and carried. Belts, with pouches, and knives with flat bronze blades and riveted handles. Three of the delegation had small flutes hung by cords

around their necks, and a fourth had a reed Pan-pipe. No shields, and no swords; that was good. Swords and shields mean organized warfare, possibly a warrior-caste. This crowd weren't warriors. The spearmen and bowmen weren't arrayed for battle, but for a drive-hunt, with the bows behind the spears to stop anything that broke through the line.

"All right; let's go meet them." The querulous, uncertain note was gone from Meillard's voice; he knew what to do and how to do it.

Gofredo called to the Marines to stand fast. Then they were advancing to meet the natives, and when they were twenty feet apart, both groups halted. The horn stopped blowing. The one in the yellow robe lifted his staff and said something that sounded like, "*Tweedle-eedle-oodly-eenk*."

The horn, he saw, was made of strips of leather, wound spirally and coated with some kind of varnish. Everything these people had was carefully and finely made. An old culture, but a static one. Probably tradition-bound as all get-out.

Meillard was raising his hands; solemnly he addressed the natives:

"'Twas brillig and the slithy toves were whooping it up in the Malemute Saloon, and the kid that handled the music box did gyre and gimble in the wabe, and back of the bar in a solo game all mimsy were the borogoves, and the mome raths outgabe the lady that's known as Lou."

That was supposed to show them that we, too, have a spoken language, to prove that their language and ours were mutually incomprehensible, and to demonstrate the need for devising a means of communication. At least that was what the book said. It demonstrated nothing of the sort to this crowd. It scared them. The dignitary with the staff twittered excitedly. One of his companions agreed with him at length. Another started to reach for his knife, then remembered his manners. The bellowsman pumped a few blasts on the horn.

"What do you think of the language?" he asked Lillian.

"They all sound that bad, when you first hear them. Give them a few seconds, and then we'll have Phase Two."

When the gibbering and skreeking began to fall off, she stepped forward. Lillian was, herself, a good test of how human aliens were; this gang weren't human enough to whistle at her. She touched herself on the breast. "Me," she said.

The natives seemed shocked. She repeated the gesture and the word, then turned and addressed Paul Meillard. "You."

"Me," Meillard said, pointing to himself. Then he said, "You," to Luis Gofredo. It went around the contact team; when it came to him, he returned it to point of origin.

"I don't think they get it at all," he added in a whisper.

"They ought to," Lillian said. "Every language has a word for self and a word

for person-addressed.''

''Well, look at them,'' Karl Dorver invited. ''Six different opinions about what we mean, and now the band's starting an argument of their own.''

''Phase Two-A,'' Lillian said firmly, stepping forward. She pointed to herself. ''Me—Lillian Ransby. Lillian Ransby—me *name*. You—*name*?

''***Bwoooo!***'' the spokesman screamed in horror, clutching his staff as though to shield it from profanation. The others howled like a hound-pack at a full moon, except one of the short-tunic boys, who was slapping himself on the head with both hands and yodeling. The horn-crew hastily swung their piece around at the Terrans, pumping frantically.

''What do you suppose I said?'' Lillian asked.

''Oh, something like, 'Curse your gods, death to your king, and spit in your mother's face,' I suppose.''

''Let me try it,'' Gofredo said.

The little Marine major went through the same routine. At his first word, the uproar stopped; before he was through, the natives' faces were sagging and crumbling into expressions of utter and heartbroken grief.

''It's not as bad as all that, is it?'' he said. ''You try it, Mark.''

''Me ... Mark ... Howell....'' They looked bewildered.

''Let's try objects, and play-acting,'' Lillian suggested. ''They're farmers; they ought to have a word for water.''

They spent almost an hour at it. They poured out two gallons of water, pretended to be thirsty, gave each other drinks. The natives simply couldn't agree on the word, in their own language, for water. That or else they missed the point of the whole act. They tried fire, next. The efficiency of a steel hatchet was impressive, and so was the sudden flame of a pocket-lighter, but no word for fire emerged, either.

''Ah, to Nifflheim with it!'' Luis Gofredo cried in exasperation. ''We're getting nowhere at five times light speed. Give them their presents and send them home, Paul.''

''Sheath-knives; they'll have to be shown how sharp they are,'' he suggested. ''Red bandannas. And costume jewelry.''

''How about something to eat, Bennet?'' Meillard asked Fayon.

''Extee Three, and C-H trade candy,'' Fayon said. Field Ration, Extraterrestrial Service, Type Three, could be eaten by anything with a carbon-hydrogen metabolism, and so could the trade candy. ''Nothing else, though, till we have some idea what goes on inside them.''

Dorver thought the six members of the delegation would be persons of special consequence, and should have something extra. That was probably so. Dorver

was as quick to pick up clues to an alien social order as he was, himself, to deduce a culture pattern from a few artifacts. He and Lillian went back to the landing craft to collect the presents.

Everybody, horn-detail, armed guard and all, got one ten-inch bowie knife and sheath, a red bandanna neckcloth, and a piece of flashy junk jewelry. The (town council? prominent citizens? or what?) also received a colored table-spread apiece; these were draped over their shoulders and fastened with two-inch plastic pins advertising the candidacy of somebody for President of the Federation Member Republic of Venus a couple of elections ago. They all looked woebegone about it; that would be their expression of joy. Different type nerves and different facial musculature, Fayon thought. As soon as they sampled the Extee Three and candy, they looked crushed under all the sorrows of the galaxy.

By pantomime and pointing to the sun, Meillard managed to inform them that the next day, when the sun was in the same position, the Terrans would visit their village, bringing more gifts. The natives were quite agreeable, but Meillard was disgruntled that he had to use sign-talk. The natives started off toward the village on the mound, munching Extee Three and trying out their new knives. This time tomorrow, half of them would have bandaged thumbs.

The Marine riflemen and submachine-gunners were coming in, slinging their weapons and lighting cigarettes. A couple of Navy technicians were getting a snooper—a thing shaped like a short-tailed tadpole, six feet long by three at the widest, fitted with visible-light and infra-red screen pickups and crammed with detection instruments—ready to relieve the combat car over the village. The contact team crowded into the Number One landing craft, which had been fitted out as a temporary headquarters. Prefab-hut elements were already being unloaded from the other craft.

Everybody felt that a drink was in order, even if it was two hours short of cocktail time. They carried bottles and glasses and ice to the front of the landing craft and sat down in front of the battery of view and communication screens. The central screen was a two-way, tuned to one in the officers' lounge aboard the *Hubert Penrose*, two hundred miles above. In it, also provided with drinks, were Captain Guy Vindinho and two other Navy officers, and a Marine captain in shipboard blues. Like Gofredo, Vindinho must have gotten into the Service on tiptoe; he had a bald dome and a red beard, and he always looked as though he were gloating because nobody knew that his name was really Rumplestiltskin. He had been watching the contact by screen. He lifted his glass toward Meillard.

"Over the hump, Paul?"

Meillard raised his drink to Vindinho. "Over the first one. There's a whole string of them ahead. At least, we sent them away happy. I hope."

"You're going to make permanent camp where you are now?" one of the

other officers asked. Lieutenant-Commander Dave Questell; ground engineering and construction officer. "What do you need?"

There were two viewscreens from pickups aboard the 2500-foot battle cruiser. One, at ten-power magnification, gave a maplike view of the broad valley and the uplands and mountain foothills to the south. It was only by tracing the course of the main river and its tributaries that they could find the tiny spot of the native village, and they couldn't see the landing craft at all. The other, at a hundred power, showed the oblong mound, with the village on its flat top, little dots around a circular central plaza. They could see the two turtle-shaped landing-craft, and the combat car, that had been circling over the mound, landing beside them, and, sometimes, a glint of sunlight from the snooper that had taken its place.

The snooper was also transmitting in, to another screen, from two hundred feet above the village. From the sound outlet came an incessant gibber of native voices. There were over a hundred houses, all small and square, with pyramidal roofs. On the end of the mound toward the Terran camp, animals of at least four different species were crowded, cattle that had been herded up from the meadows at the first alarm. The open circle in the middle of the village was crowded, and more natives lined the low palisade along the edge of the mound.

"Well, we're going to stay here till we learn the language," Meillard was saying. "This is the best place for it. It's completely isolated, forests on both sides, and seventy miles to the nearest other village. If we're careful, we can stay here as long as we want to and nobody'll find out about us. Then, after we can talk with these people, we'll go to the big town."

The big town was two hundred and fifty miles down the valley, at the forks of the main river, a veritable metropolis of almost three thousand people. That was where the treaty would have to be negotiated.

"You'll want more huts. You'll want a water tank, and a pipeline to that stream below you, and a pump," Questell said. "You think a month?"

Meillard looked at Lillian Ransby. "What do you think?"

"*Poodly-doodly-oodly-foodle*," she said. "You saw how far we didn't get this afternoon. All we found out was that none of the standard procedures work at all." She made a tossing gesture over her shoulder. "There goes the book; we have to do it off the cuff from here."

"Suppose we make another landing, back in the mountains, say two or three hundred miles south of you," Vindinho said. "It's not right to keep the rest aboard two hundred miles off planet, and you won't be wanting liberty parties coming down where you are."

"The country over there looks uninhabited," Meillard said. "No villages, anyhow. That wouldn't hurt, at all."

"Well, it'll suit me," Charley Loughran, the xeno-naturalist, said. "I want a

chance to study the life-forms in a state of nature.''

Vindinho nodded. ''Luis, do you anticipate any trouble with this crowd here?'' he asked.

''How about it, Mark? What do they look like to you? Warlike?''

''No.'' He stated the opinion he had formed. ''I had a close look at their weapons when they came in for their presents. Hunting arms. Most of the spears have cross-guards, usually wooden, lashed on, to prevent a wounded animal from running up the spear-shaft at the hunter. They made boar-spears like that on Terra a thousand years ago. Maybe they have to fight raiding parties from the hills once in a while, but not often enough for them to develop special fighting weapons or techniques.''

''Their village is fortified,'' Meillard mentioned.

''I question that,'' Gofredo differed. ''There won't be more than a total of five hundred there; call that a fighting strength of two hundred, to defend a twenty-five-hundred-meter perimeter, with woodchoppers' axes and bows and spears. If you notice, there's no wall around the village itself. That palisade is just a fence.''

''Why would they mound the village up?'' Questell, in the screen wondered. ''You don't think the river gets up that high, do you? Because if it does—''

Schallenmacher shook his head. ''There just isn't enough watershed, and there's too much valley. I'll be very much surprised if that stream, there''—he nodded at the hundred-power screen—''ever gets more than six inches over the bank.''

''I don't know what those houses are built of. This is all alluvial country; building stone would be almost unobtainable. I don't see anything like a brick kiln. I don't see any evidence of irrigation, either, so there must be plenty of rainfall. If they use adobe, or sun-dried brick, houses would start to crumble in a few years, and they would be pulled down and the rubble shoved aside to make room for a new house. The village has been rising on its own ruins, probably shifting back and forth from one end of that mound to the other.''

''If that's it, they've been there a long time,'' Karl Dorver said. ''And how far have they advanced?''

''Early bronze; I'll bet they still use a lot of stone implements. Pre-dynastic Egypt, or very early Tigris-Euphrates, in Terran terms. I can't see any evidence that they have the wheel. They have draft animals; when we were coming down, I saw a few of them pulling pole travoises. I'd say they've been farming for a long time. They have quite a diversity of crops, and I suspect that they have some idea of crop-rotation. I'm amazed at their musical instruments; they seem to have put more skill into making them than anything else. I'm going to take a jeep, while they're all in the village, and have a look around the fields, now.''

Charley Loughran went along for specimens, and, for the ride, Lillian Ransby. Most of his guesses, he found, had been correct. He found a number of pole

travoises, from which the animals had been unhitched in the first panic when the landing craft had been coming down. Some of them had big baskets permanently attached. There were drag-marks everywhere in the soft ground, but not a single wheel track. He found one plow, cunningly put together with wooden pegs and rawhide lashings; the point was stone, and it would only score a narrow groove, not a proper furrow. It was, however, fitted with a big bronze ring to which a draft animal could be hitched. Most of the cultivation seemed to have been done with spades and hoes. He found a couple of each, bronze, cast flat in an open-top mold. They hadn't learned to make composite molds.

There was an even wider variety of crops than he had expected: two cereals, a number of different root-plants, and a lot of different legumes, and things like tomatoes and pumpkins.

"Bet these people had a pretty good life, here—before the Terrans came," Charley observed.

"Don't say that in front of Paul," Lillian warned. "He has enough to worry about now, without starting him on whether we'll do these people more harm than good."

Two more landing craft had come down from the Hubert Penrose; they found Dave Questell superintending the unloading of more prefab-huts, and two were already up that had been brought down with the first landing.

A name for the planet had also arrived.

"Svantovit," Karl Dorver told him. "Principal god of the Baltic Slavs, about three thousand years ago. Guy Vindinho dug it out of the 'Encyclopedia of Mythology.' Svantovit was represented as holding a bow in one hand and a horn in the other."

"Well, that fits. What will we call the natives; Svantovitians, or Svantovese?"

"Well, Paul wanted to call them Svantovese, but Luis persuaded him to call them Svants. He said everybody'd call them that, anyhow, so we might as well make it official from the start."

"We can call the language Svantovese," Lillian decided. "After dinner, I am going to start playing back recordings and running off audiovisuals. I will be so happy to know that I have a name for what I'm studying. Probably be all I will know."

After dinner, he and Karl and Paul went into a huddle on what sort of gifts to give the natives, and the advisability of trading with them, and for what. Nothing too far in advance of their present culture level. Wheels; they could be made in the fabricating shop aboard the ship.

"You know, it's odd," Karl Dorver said. "These people here have never seen a wheel, and, except in documentary or historical-drama films, neither have a lot of Terrans."

That was true. As a means of transportation, the wheel had been completely obsolete since the development of contragravity, six centuries ago. Well, a lot of Terrans in the Year Zero had never seen a suit of armor, or an harquebus, or even a tinder box or a spinning wheel.

Wheelbarrows; now there was something they'd find useful. He screened Max Milzer, in charge of the fabricating and repair shops on the ship. Max had never even heard of a wheelbarrow.

"I can make them up, Mark; better send me some drawings, though. Did you just invent it?"

"As far as I know, a man named Leonardo da Vinci invented it, in the Sixth Century Pre-Atomic. How soon can you get me half a dozen of them?"

"Well, let's see. Welded sheet metal, and pipe for the frame and handles. I'll have some of them for you by noon tomorrow. Now, about hoes; how tall are these people, and how long are their arms, and how far can they stoop over?"

They were all up late, that night. So were the Svants; there was a fire burning in the middle of the village, and watch-fires along the edge of the mound. Luis Gofredo was just as distrustful of them as they were of the Terrans; he kept the camp lighted, a strong guard on the alert, and the area of darkness beyond infra red lighted and covered by photoelectric sentries on the ground and snoopers in the air. Like Paul Meillard, Luis Gofredo was a worrier and a pessimist. Everything happened for the worst in this worst of all possible galaxies, and if anything could conceivably go wrong, it infallibly would. That was probably why he was still alive and had never had a command massacred.

The wheelbarrows, four of them, came down from the ship by midmorning. With them came a grindstone, a couple of crosscut saws, and a lot of picks and shovels and axes, and cases of sheath knives and mess gear and miscellaneous trade goods, including a lot of the empty wine and whisky bottles that had been hoarded for the past four years.

At lunch, the talk was almost exclusively about the language problem. Lillian Ransby, who had not gotten to sleep before sunrise and had just gotten up, was discouraged.

"I don't know what we're going to do next," she admitted. "Glenn Orent and Anna and I were on it all night, and we're nowhere. We have about a hundred wordlike sounds isolated, and twenty or so are used repeatedly, and we can't assign a meaning to any of them. And none of the Svants ever reacted the same way twice to anything we said to them. There's just no one-to-one relationship anywhere."

"I'm beginning to doubt they have a language," the Navy intelligence officer said. "Sure, they make a lot of vocal noise. So do chipmunks."

"They have to have a language," Anna de Jong declared. "No sapient thought

is possible without verbalization.''

''Well, no society like that is possible without some means of communication,'' Karl Dorver supported her from the other flank. He seemed to have made that point before. ''You know,'' he added, ''I'm beginning to wonder if it mightn't be telepathy.''

He evidently hadn't suggested that before. The others looked at him in surprise. Anna started to say, ''Oh, I doubt if—'' and then stopped.

''I know, the race of telepaths is an old gimmick that's been used in new-planet adventure stories for centuries, but maybe we've finally found one.''

''I don't like it, Karl,'' Loughran said. ''If they're telepaths, why don't they understand us? And if they're telepaths, why do they talk at all? And you can't convince me that this boodly-oodly-doodle of theirs isn't talking.''

''Well, our neural structure and theirs won't be nearly alike,'' Fayon said. ''I know, this analogy between telepathy and radio is full of holes, but it's good enough for this. Our wave length can't be picked up with their sets.''

''The deuce it can't,'' Gofredo contradicted. ''I've been bothered about that from the beginning. These people act as though they got meaning from us. Not the meaning we intend, but some meaning. When Paul made the gobbledygook speech, they all reacted in the same way—frightened, and then defensive. The you-me routine simply bewildered them, as we'd be at a set of semantically lucid but self-contradictory statements. When Lillian tried to introduce herself, they were shocked and horrified....''

''It looked to me like actual physical disgust,'' Anna interpolated.

''When I tried it, they acted like a lot of puppies being petted, and when Mark tried it, they were simply baffled. I watched Mark explaining that steel knives were dangerously sharp; they got the demonstration, but when he tried to tie words onto it, it threw them completely.''

''ALL RIGHT. Pass that,'' Loughran conceded. ''But if they have telepathy, why do they use spoken words?''

''Oh, I can answer that,'' Anna said. ''Say they communicated by speech originally, and developed their telepathic faculty slowly and without realizing it. They'd go on using speech, and since the message would be received telepathically ahead of the spoken message, nobody would pay any attention to the words as such. Everybody would have a spoken language of his own; it would be sort of the instrumental accompaniment to the song.''

''Some of them don't bother speaking,'' Karl nodded. ''They just toot.''

''I'll buy that, right away,'' Loughran agreed. ''In mating, or in group-danger situations, telepathy would be a race-survival characteristic. It would be selected for genetically, and the non-gifted strains would tend to die out.''

It wouldn't do. It wouldn't do at all. He said so.

"Look at their technology. We either have a young race, just emerged from savagery, or an old, stagnant race. All indications seem to favor the latter. A young race would not have time to develop telepathy as Anna suggests. An old race would have gone much farther than these people have. Progress is a matter of communication and pooling ideas and discoveries. Make a trend-graph of technological progress on Terra; every big jump comes after an improvement in communications. The printing press; railways and steamships; the telegraph; radio. Then think how telepathy would speed up progress."

The sun was barely past noon meridian before the Svants, who had ventured down into the fields at sunrise, were returning to the mound-village. In the snooper-screen, they could be seen coming up in tunics and breechclouts, entering houses, and emerging in long robes. There seemed to be no bows or spears in evidence, but the big horn sounded occasionally. Paul Meillard was pleased. Even if it had been by sign-talk, which he rated with worm-fishing for trout or shooting sitting rabbits, he had gotten something across to them.

When they went to the village, at 1500, they had trouble getting their lorry down. A couple of Marines in a jeep had to go in first to get the crowd out of the way. Several of the locals, including the one with the staff, joined with them; this quick co-operation delighted Meillard. When they had the lorry down and were all out of it, the dignitary with the staff, his scarlet tablecloth over his yellow robe, began an oration, apparently with every confidence that he was being understood. In spite of his objections at lunch, the telepathy theory was beginning to seem more persuasive.

"Give them the Shooting of Dan McJabberwock again," he told Meillard. "This is where we came in yesterday."

Something Meillard had noticed was exciting him. "Wait a moment. They're going to do something."

They were indeed. The one with the staff and three of his henchmen advanced. The staff bearer touched himself on the brow. "*Fwoonk*," he said. Then he pointed to Meillard. "*Hoonkle*," he said.

"They got it!" Lillian was hugging herself joyfully. "I knew they ought to!"

Meillard indicated himself and said, "*Fwoonk*."

That wasn't right. The village elder immediately corrected him. The word, it seemed, was, "*Fwoonk*."

His three companions agreed that that was the word for self, but that was as far as the agreement went. They rendered it, respectively, as "*Pwink*," "*Tweelt*" and "*Kroosh*."

Gofredo gave a barking laugh. He was right; anything that could go wrong would go wrong. Lillian used a word; it was not a ladylike word at all. The Svants

looked at them as though wondering what could possibly be the matter. Then they went into a huddle, arguing vehemently. The argument spread, like a ripple in a pool; soon everybody was twittering vocally or blowing on flutes and Panpipes. Then the big horn started blaring. Immediately, Gofredo snatched the hand-phone of his belt radio and began speaking urgently into it.

"What are you doing, Luis?" Meillard asked anxiously.

"Calling the reserve in. I'm not taking chances on this." He spoke again into the phone, then called over his shoulder: "Rienet; three one-second bursts, in the air!"

A Marine pointed a submachine gun skyward and ripped off a string of shots, then another, and another. There was silence after the first burst. Then a frightful howling arose.

"Luis, you imbecile!" Meillard was shouting.

Gofredo jumped onto the top of an airjeep, where they could all see him; drawing his pistol, he fired twice into the air.

"Be quiet, all of you!" he shouted, as though that would do any good.

It did. Silence fell, bounced noisily, and then settled over the crowd. Gofredo went on talking to them: "Take it easy, now; easy." He might have been speaking to a frightened dog or a fractious horse. "Nobody's going to hurt you. This is nothing but the great noise-magic of the Terrans...."

"Get the presents unloaded," Meillard was saying. "Make a big show of it. The table first."

The horn, which had started, stopped blowing. As they were getting off the long table and piling it with trade goods, another lorry came in, disgorging twenty Marine riflemen. They had their bayonets fixed; the natives looked apprehensively at the bare steel, but went on listening to Gofredo. Meillard pulled the (Lord Mayor? Archbishop? Lord of the Manor?) aside, and began making sign-talk to him.

When quiet was restored, Howell put a pick and shovel into a wheelbarrow and pushed them out into the space that had been cleared in front of the table. He swung the pick for a while, then shoveled the barrow full of ground. After pushing it around for a while, he dumped it back in the hole and leveled it off. Two Marines brought out an eight-inch log and chopped a couple of billets off it with an ax, then cut off another with one of the saws, split them up, and filled the wheelbarrow with the firewood.

[Illustration: We can't use the computer till we can tell it what the data is data about!]

The knives, jewelry and other small items would be no problem; they had enough of them to go around. The other stuff would be harder to distribute, and

Paul Meillard and Karl Dorver were arguing about how to handle it. If they weren't careful, a lot of new bowie knives would get bloodied.

"Have them form a queue," Anna suggested. "That will give them the idea of equal sharing, and we'll be able to learn something about their status levels and social hierarchy and agonistic relations."

The one with the staff took it as a matter of course that he would go first; his associates began falling in behind him, and the rest of the villagers behind them. Whether they'd gotten one the day before or not, everybody was given a knife and a bandanna and one piece of flashy junk-jewelry, also a stainless steel cup and mess plate, a bucket, and an empty bottle with a cork. The women didn't carry sheath knives, so they got Boy Scout knives on lanyards. They were all lavishly supplied with Extee Three and candy. Any of the children who looked big enough to be trusted with them got knives too, and plenty of candy.

Anna and Karl were standing where the queue was forming, watching how they fell into line; so was Lillian, with an audiovisual camera. Having seen that the Marine enlisted men were getting the presents handed out properly, Howell strolled over to them. Just as he came up, a couple approached hesitantly, a man in a breechclout under a leather apron, and a woman, much smaller, in a ragged and soiled tunic. As soon as they fell into line, another Svant, in a blue robe, pushed them aside and took their place.

"Here, you can't do that!" Lillian cried. "Karl, make him step back."

Karl was saying something about social status and precedence. The couple tried to get into line behind the man who had pushed them aside. Another villager tried to shove them out of his way. Howell advanced, his right fist closing. Then he remembered that he didn't know what he'd be punching; he might break the fellow's neck, or his own knuckles. He grabbed the blue-robed Svant by the wrist with both hands, kicked a foot out from under him, and jerked, sending him flying for six feet and then sliding in the dust for another couple of yards. He pushed the others back, and put the couple into place in the line.

"Mark, you shouldn't have done that," Dorver was expostulating. "We don't know...."

The Svant sat up, shaking his head groggily. Then he realized what had been done to him. With a snarl of rage, he was on his feet, his knife in his hand. It was a Terran bowie knife. Without conscious volition, Howell's pistol was out and he was thumbing the safety off.

The Svant stopped short, then dropped the knife, ducked his head, and threw his arms over it to shield his comb. He backed away a few steps, then turned and bolted into the nearest house. The others, including the woman in the ragged tunic, were twittering in alarm. Only the man in the leather apron was calm; he was saying, tonelessly, "Ghrooogh-ghrooogh."

Luis Gofredo was coming up on the double, followed by three of his riflemen.

"What happened, Mark? Trouble?"

"All over now." He told Gofredo what had happened. Dorver was still objecting:

"... Social precedence; the Svant may have been right, according to local customs."

"Local customs be damned!" Gofredo became angry. "This is a Terran Federation handout; we make the rules, and one of them is, no pushing people out of line. Teach the buggers that now and we won't have to work so hard at it later." He called back over his shoulder, "Situation under control; get the show going again."

The natives were all grimacing heartbrokenly with pleasure. Maybe the one who got thrown on his ear—no, he didn't have any—was not one of the more popular characters in the village.

"You just pulled your gun, and he dropped the knife and ran?" Gofredo asked. "And the others were scared, too?"

"That's right. They all saw you fire yours; the noise scared them."

Gofredo nodded. "We'll avoid promiscuous shooting, then. No use letting them find out the noise won't hurt them any sooner than we have to."

Paul Meillard had worked out a way to distribute the picks and shovels and axes. Considering each house as representing a family unit, which might or might not be the case, there were picks and shovels enough to go around, and an ax for every third house. They took them around in an airjeep and left them at the doors. The houses, he found, weren't adobe at all. They were built of logs, plastered with adobe on the outside. That demolished his theory that the houses were torn down periodically, and left the mound itself unexplained.

The wheelbarrows and the grindstone and the two crosscut saws were another matter. Nobody was quite sure that the (nobility? capitalist-class? politicians? prominent citizens?) wouldn't simply appropriate them for themselves. Paul Meillard was worried about that; everybody else was willing to let matters take their course. Before they were off the ground in their vehicles, a violent dispute had begun, with a bedlam of jabbering and shrieking. By the time they were landing at the camp, the big laminated leather horn had begun to bellow.

One of the huts had been fitted as contact-team headquarters, with all the view and communication screens installed, and one end partitioned off and soundproofed for Lillian to study recordings in. It was cocktail time when they returned; conversationally, it was a continuation from lunch. Karl Dorver was even more convinced than ever of his telepathic hypothesis, and he had completely converted Anna de Jong to it.

"Look at that." He pointed at the snooper screen, which gave a view of the plaza from directly above. "They're reaching an agreement already."

So they seemed to be, though upon what was less apparent. The horn had stopped, and the noise was diminishing. The odd thing was that peace was being restored, or was restoring itself, as the uproar had begun—outwardly from the center of the plaza to the periphery of the crowd. The same thing had happened when Gofredo had ordered the submachine gun fired, and, now that he recalled, when he had dealt with the line-crasher.

"Suppose a few of them, in the middle, are agreed," Anna said. "They are all thinking in unison, combining their telepathic powers. They dominate those nearest to them, who join and amplify their telepathic signal, and it spreads out through the whole group. A mental chain-reaction."

"That would explain the mechanism of community leadership, and I'd been wondering about that," Dorver said, becoming more excited. "It's a mental aristocracy; an especially gifted group of telepaths, in agreement and using their powers in concert, implanting their opinions in the minds of all the others. I'll bet the purpose of the horn is to distract the thoughts of the others, so that they can be more easily dominated. And the noise of the shots shocked them out of communication with each other; no wonder they were frightened."

Bennet Fayon was far from convinced. "So far, this telepathy theory is only an assumption. I find it a lot easier to assume some fundamental difference between the way they translate sound into sense-data and the way we do. We think those combs on top of their heads are their external hearing organs, but we have no idea what's back of them, or what kind of a neural hookup is connected to them. I wish I knew how these people dispose of their dead. I need a couple of fresh cadavers. Too bad they aren't warlike. Nothing like a good bloody battle to advance the science of anatomy, and what we don't know about Svant anatomy is practically the entire subject."

"I should imagine the animals hear in the same way," Meillard said. "When the wagon wheels and the hoes and the blacksmith tools come down from the ship, we'll trade for cattle."

"When they make the second landing in the mountains, I'm going to do a lot of hunting," Loughran added. "I'll get wild animals for you."

"Well, I'm going to assume that the vocal noises they make are meaningful speech," Lillian Ransby said. "So far, I've just been trying to analyze them for phonetic values. Now I'm going to analyze them for sound-wave patterns. No matter what goes on inside their private nervous systems, the sounds exist as waves in the public atmosphere. I'm going to assume that the Lord Mayor and his stooges were all trying to say the same thing when they were pointing to themselves, and I'm going to see if all four of those sounds have any common characteristic."

By the time dinner was over, they were all talking in circles, none of them hopefully. They all made recordings of the speech about the slithy toves in the Malemute Saloon; Lillian wanted to find out what was different about them. Luis Gofredo saw to it that the camp itself would be visible-lighted, and beyond the lights he set up more photoelectric robot sentries and put a couple of snoopers to circling on contragravity, with infra-red lights and receptors. He also insisted that all his own men and all Dave Questell's Navy construction engineers keep their weapons ready to hand. The natives in the village were equally distrustful. They didn't herd the cattle up from the meadows where they had been pastured, but they lighted watch-fires along the edge of the mound as soon as it became dark.

It was three hours after nightfall when something on the indicator-board for the robot sentries went off like a startled rattlesnake. Everybody, talking idly or concentrating on writing up the day's observations, stiffened. Luis Gofredo, dozing in a chair, was on his feet instantly and crossing the hut to the instruments. His second-in-command, who had been playing chess with Willi Schallenmacher, rose and snatched his belt from the back of his chair, putting it on.

"Take it easy," Gofredo said. "Probably just a cow or a horse—local equivalent—that's strayed over from the other side."

He sat down in front of one of the snooper screens and twisted knobs on the remote controls. The monochrome view, transformed from infra red, rotated as the snooper circled and changed course. The other screen showed the camp receding and the area around it widening as its snooper gained altitude.

"It's not a big party," Gofredo was saying. "I can't see—Oh, yes I can. Only two of them."

The humanoid figures, one larger than the other, were moving cautiously across the fields, crouching low. The snooper went down toward them, and then he recognized them. The man and woman whom the blue-robed villager had tried to shove out of the queue, that afternoon. Gofredo recognized them, too.

"Your friends, Mark. Harry," he told his subordinate, "go out and pass the word around. Only two, and we think they're friendly. Keep everybody out of sight; we don't want to scare them away."

The snooper followed closely behind them. The man was no longer wearing his apron; the woman's tunic was even more tattered and soiled. She was leading him by the hand. Now and then, she would stop and turn her head to the rear. The snooper over the mound showed nothing but half a dozen fire-watchers dozing by their fires. Then the pair were at the edge of the camp lights. As they advanced, they seemed to realize that they had passed a point-of-no-return. They straightened and came forward steadily, the woman seeming to be guiding her companion.

"What's happening, Mark?"

It was Lillian; she must have just come out of the soundproof speech-lab.

"You know them; the pair in the queue, this afternoon. I think we've annexed a couple of friendly natives."

They all went outside. The two natives, having come into the camp, had stopped. For a moment, the man in the breechclout seemed undecided whether he was more afraid to turn and run than advance. The woman, holding his hand, led him forward. They were both bruised, and both had minor cuts, and neither of them had any of the things that had been given to them that afternoon.

"Rest of the gang beat them up and robbed them," Gofredo began angrily.

"See what you did?" Dorver began. "According to their own customs, they had no right to be ahead of those others, and now you've gotten them punished for it."

"I'd have done more to that fellow then Mark did, if I'd been there when it happened." The Marine officer turned to Meillard. "Look, this is your show, Paul; how you run it is your job. But in your place, I'd take that pair back to the village and have them point out who beat them up, and teach the whole gang of them a lesson. If you're going to colonize this planet, you're going to have to establish Federation law, and Federation law says you mustn't gang up on people and beat and rob them. We don't have to speak Svantese to make them understand what we'll put up with and what we won't."

"Later, Luis. After we've gotten a treaty with somebody." Meillard broke off. "Watch this!"

The woman was making sign-talk. She pointed to the village on the mound. Then, with her hands, she shaped a bucket like the ones that had been given to them, and made a snatching gesture away from herself. She indicated the neckcloths, and the sheath knife and the other things, and snatched them away too. She made beating motions, and touched her bruises and the man's. All the time, she was talking excitedly, in a high, shrill voice. The man made the same *ghroogh-ghroogh* noises that he had that afternoon.

"No; we can't take any punitive action. Not now," Meillard said. "But we'll have to do something for them."

Vengeance, it seemed, wasn't what they wanted. The woman made vehement gestures of rejection toward the village, then bowed, placing her hands on her brow. The man imitated her obeisance, then they both straightened. The woman pointed to herself and to the man, and around the circle of huts and landing craft. She began scuttling about, picking up imaginary litter and sweeping with an imaginary broom. The man started pounding with an imaginary hammer, then chopping with an imaginary ax.

Lillian was clapping her hands softly. "Good; got it the first time. 'You let us stay; we work for you.' How about it, Paul?"

Meillard nodded. "Punitive action's unadvisable, but we will show our attitude by taking them in. You tell them, Luis; these people seem to like your voice."

Gofredo put a hand on each of their shoulders. "You ... stay ... with us." He pointed around the camp. "You ... stay ... this ... place."

Their faces broke into that funny just-before-tears expression that meant happiness with them. The man confined his vocal expressions to his odd ghroogh-ghroogh-ing; the woman twittered joyfully. Gofredo put a hand on the woman's shoulder, pointed to the man and from him back to her. "Unh?" he inquired.

The woman put a hand on the man's head, then brought it down to within a foot of the ground. She picked up the imaginary infant and rocked it in her arms, then set it down and grew it up until she had her hand on the top of the man's head again.

"That was good, Mom," Gofredo told her. "Now, you and Sonny come along; we'll issue you equipment and find you billets." He added, "What in blazes are we going to feed them; Extee Three?"

They gave them replacements for all the things that had been taken away from them. They gave the man a one-piece suit of Marine combat coveralls; Lillian gave the woman a lavender bathrobe, and Anna contributed a red scarf. They found them quarters in one end of a store shed, after making sure that there was nothing they could get at that would hurt them or that they could damage. They gave each of them a pair of blankets and a pneumatic mattress, which delighted them, although the cots puzzled them at first.

"What do you think about feeding them, Bennet?" Meillard asked, when the two Svants had gone to bed and they were back in the headquarters hut. "You said the food on this planet is safe for Terrans."

"So I did, and it is, but the rule's not reversible. Things we eat might kill them," Fayon said. "Meats will be especially dangerous. And no caffein, and no alcohol."

"Alcohol won't hurt them," Schallenmacher said. "I saw big jars full of fermenting fruit-mash back of some of those houses; in about a year, it ought to be fairly good wine. C^2H^5OH is the same on any planet."

"Well, we'll get native foodstuffs tomorrow," Meillard said. "We'll have to do that by signs, too," he regretted.

"Get Mom to help you; she's pretty sharp," Lillian advised. "But I think Sonny's the village half-wit."

Anna de Jong agreed. "Even if we don't understand Svant psychology, that's evident; he's definitely subnormal. The way he clings to his mother for guidance is absolutely pathetic. He's a mature adult, but mentally he's still a little child."

"That may explain it!" Dorver cried. "A mental defective, in a community of

telepaths, constantly invading the minds of others with irrational and disgusting thoughts; no wonder he is rejected and persecuted. And in a community on this culture level, the mother of an abnormal child is often regarded with superstitious detestation—''

''Yes, of course!'' Anna de Jong instantly agreed, and began to go into the villagers' hostility to both mother and son; both of them were now taking the telepathy hypothesis for granted.

Well, maybe so. He turned to Lillian.

''What did you find out?''

''Well, there is a common characteristic in all four sounds. A little patch on the screen at seventeen-twenty cycles. The odd thing is that when I try to repeat the sound, it isn't there.''

Odd indeed. If a Svant said something, he made sound waves; if she imitated the sound, she ought to imitate the wave pattern. He said so, and she agreed.

''But come back here and look at this,'' she invited.

She had been using a visibilizing analyzer; in it, a sound was broken by a set of filters into frequency-groups, translated into light from dull red to violet paling into pure white. It photographed the light-pattern on high-speed film, automatically developed it, and then made a print-copy and projected the film in slow motion on a screen. When she pressed a button, a recorded voice said, ''*Fwoonk*.'' An instant later, a pattern of vertical lines in various colors and lengths was projected on the screen.

''Those green lines,'' she said. ''That's it. Now, watch this.''

She pressed another button, got the photoprint out of a slot, and propped it beside the screen. Then she picked up a hand-phone and said, ''*Fwoonk*,'' into it. It sounded like the first one, but the pattern that danced onto the screen was quite different. Where the green had been, there was a patch of pale-blue lines. She ran the other three Svants' voices, each saying, presumably, ''Me.'' Some were mainly up in blue, others had a good deal of yellow and orange, but they all had the little patch of green lines.

''Well, that seems to be the information,'' he said. ''The rest is just noise.''

''Maybe one of them is saying, 'John Doe, *me*, son of Joe Blow,' and another is saying, 'Tough guy, *me*; lick anybody in town.'''

''All in one syllable?'' Then he shrugged. How did he know what these people could pack into one syllable? He picked up the hand-phone and said, ''Fwoonk,'' into it. The pattern, a little deeper in color and with longer lines, was recognizably like hers, and unlike any of the Svants'.

The others came in, singly and in pairs and threes. They watched the colors dance on the screen to picture the four Svant words which might or might not all

mean me. They tried to duplicate them. Luis Gofredo and Willi Schallenmacher came closest of anybody. Bennet Fayon was still insisting that the Svants had a perfectly comprehensible language—to other Svants. Anna de Jong had started to veer a little away from the Dorver Hypothesis. There was a difference between event-level sound, which was a series of waves of alternately crowded and rarefied molecules of air, and object-level sound, which was an auditory sensation inside the nervous system, she admitted. That, Fayon crowed, was what he'd been saying all along; their auditory system was probably such that *fwoonk* and *pwink* and *tweelt* and *kroosh* all sounded alike to them.

By this time, *fwoonk* and *pwink* and *tweelt* and *kroosh* had become swear words among the joint Space Navy-Colonial Office contact team.

"Well, if I hear the two sounds alike, why doesn't the analyzer hear them alike?" Karl Dorver demanded.

"It has better ears than you do, Karl. Look how many different frequencies there are in that word, all crowding up behind each other," Lillian said. "But it isn't sensitive or selective enough. I'm going to see what Ayesha Keithley can do about building me a better one."

Ayesha was signals and detection officer on the *Hubert Penrose*. Dave Questell mentioned that she'd had a hard day, and was probably making sack-time, and she wouldn't welcome being called at 0130. Nobody seemed to have realized that it had gotten that late.

"Well, I'll call the ship and have a recording made for her for when she gets up. But till we get something that'll sort this mess out and make sense of it, I'm stopped."

"You're stopped, period, Lillian," Dorver told her. "What these people gibber at us doesn't even make as much sense as the Shooting of Dan McJabberwock. The real information is conveyed by telepathy."

Lieutenant j.g. Ayesha Keithley was on the screen the next morning while they were eating breakfast. She was a blonde, like Lillian.

"I got your message; you seem to have problems, don't you?"

"Speaking conservatively, yes. You see what we're up against?"

"You don't know what their vocal organs are like, do you?" the girl in naval uniform in the screen asked.

Lillian shook her head. "Bennet Fayon's hoping for a war, or an epidemic, or something to break out, so that he can get a few cadavers to dissect."

"Well, he'll find that they're pretty complex," Ayesha Keithley said. "I identified stick-and-slip sounds and percussion sounds, and plucked-string sounds, along with the ordinary hiss-and-buzz speech-sounds. Making a vocoder to reproduce that speech is going to be fun. Just what are you using, in the way of

equipment?''

Lillian was still talking about that when the two landing craft from the ship were sighted, coming down. Charley Loughran and Willi Schallenmacher, who were returning to the *Hubert Penrose* to join the other landing party, began assembling their luggage. The others went outside, Howell among them.

Mom and Sonny were watching the two craft grow larger and closer above, keeping close to a group of spacemen; Sonny was looking around excitedly, while Mom clung to his arm, like a hen with an oversized chick. The reasoning was clear—these people knew all about big things that came down out of the sky and weren't afraid of them; stick close to them, and it would be perfectly safe. Sonny saw the contact team emerging from their hut and grabbed his mother's arm, pointing. They both beamed happily; that expression didn't look sad, at all, now that you knew what it meant. Sonny began ghroogh-ghrooghing hideously; Mom hushed him with a hand over his mouth, and they both made eating gestures, rubbed their abdomens comfortably, and pointed toward the mess hut. Bennet Fayon was frightened. He turned and started on the double toward the cook, who was standing in the doorway of the hut, calling out to him.

The cook spoke inaudibly. Fayon stopped short. ''Unholy Saint Beelzebub, no!'' he cried. The cook said something in reply, shrugging. Fayon came back, talking to himself.

''Terran carniculture pork,'' he said, when he returned. ''Zarathustra poolball fruit. Potato-flour hotcakes, with Baldur honey and Odin flameberry jam. And two big cups of coffee apiece. It's a miracle they aren't dead now. If they're alive for lunch, we won't need to worry about feeding them anything we eat, but I'm glad somebody else has the moral responsibility for this.''

Lillian Ransby came out of the headquarters hut. ''Ayesha's coming down this afternoon, with a lot of equipment,'' she said. ''We're not exactly going to count air molecules in the sound waves, but we'll do everything short of that. We'll need more lab space, soundproofed.''

''Tell Dave Questell what you want,'' Meillard said. ''Do you really think you can get anything?''

She shrugged. ''If there's anything there to get. How long it'll take is another question.''

The two sixty-foot collapsium-armored turtles settled to the ground and went off contragravity. The ports opened, and things began being floated off on lifter-skids: framework for the water tower, and curved titanium sheets for the tank. Anna de Jong said something about hot showers, and not having to take any more sponge-baths. Howell was watching the stuff come off the other landing craft. A dozen pairs of four-foot wagon wheels, with axles. Hoes, in bundles. Scythe blades. A hand forge, with a crank-driven fan blower, and a hundred and fifty pound an-

vil, and sledges and cutters and swages and tongs.

Everybody was busy, and Mom and Sonny were fidgeting, gesturing toward the work with their own empty hands. *Hey, boss; whatta we gonna do?* He patted them on the shoulders.

"Take it easy." He hoped his tone would convey nonurgency. "We'll find something for you to do."

He wasn't particularly happy about most of what was coming off. Giving these Svants tools was fine, but it was more important to give them technologies. The people on the ship hadn't thought of that. These wheels, now; machined steel hubs, steel rims, tubular steel spokes, drop-forged and machined axles. The Svants wouldn't be able to copy them in a thousand years. Well, in a hundred, if somebody showed them where and how to mine iron and how to smelt and work it. And how to build a steam engine.

He went over and pulled a hoe out of one of the bundles. Blades stamped out with a power press, welded to tubular steel handles. Well, wood for hoe handles was hard to come by on a spaceship, even a battle cruiser almost half a mile in diameter; he had to admit that. And they were about two thousand per cent more efficient than the bronze scrapers the Svants used. That wasn't the idea, though. Even supposing that the first wave of colonists came out in a year and a half, it would be close to twenty years before Terran-operated factories would be in mass production for the native trade. The idea was to teach these people to make better things for themselves; give them a leg up, so that the next generation would be ready for contragravity and nuclear and electric power.

Mom didn't know what to make of any of it. Sonny did, though; he was excited, grabbing Howell's arm, pointing, saying, "*Ghroogh! Ghroogh!*" He pointed at the wheels, and then made a stooping, lifting and pushing gesture. *Like wheelbarrow*?

"That's right." He nodded, wondering if Sonny recognized that as an affirmative sign. "Like big wheelbarrow."

One thing puzzled Sonny, though. Wheelbarrow wheels were small—his hands indicated the size—and single. These were big, and double.

"Let me show you this, Sonny."

He squatted, took a pad and pencil from his pocket, and drew two pairs of wheels, and then put a wagon on them, and drew a quadruped hitched to it, and a Svant with a stick walking beside it. Sonny looked at the picture—Svants seemed to have pictoral sense, for which make us thankful!—and then caught his mother's sleeve and showed it to her. Mom didn't get it. Sonny took the pencil and drew another animal, with a pole travois. He made gestures. A travois dragged; it went slow. A wagon had wheels that went around; it went fast.

So Lillian and Anna thought he was the village half-wit. Village genius, more

likely; the other peasants didn't understand him, and resented his superiority. They went over for a closer look at the wheels, and pushed them. Sonny was almost beside himself. Mom was puzzled, but she thought they were pretty wonderful.

Then they looked at blacksmith tools. Tongs; Sonny had never seen anything like them. Howell wondered what the Svants used to handle hot metal; probably big tweezers made by tying two green sticks together. There was an old Arabian legend that Allah had made the first tongs and given them to the first smith, because nobody could make tongs without having a pair already.

Sonny didn't understand the fan-blower until it was taken apart. Then he made a great discovery. The wheels, and the fan, and the pivoted tongs, all embodied the same principle, one his people had evidently never discovered. A whole new world seemed to open before him; from then on, he was constantly finding things pierced and rotating on pivots.

By this time, Mom was fidgeting again. She ought to be doing something to justify her presence in the camp. He was wondering what sort of work he could invent for her when Karl Dorver called to him from the door of the headquarters hut.

"Mark, can you spare Mom for a while?" he asked. "We want her to look at pictures and show us which of the animals are meat-cattle, and which of the crops are ripe."

"Think you can get anything out of her?"

"Sign-talk, yes. We may get a few words from her, too."

At first, Mom was unwilling to leave Sonny. She finally decided that it would be safe, and trotted over to Dorver, entering the hut.

Dave Questell's construction crew began at once on the water tank, using a power shovel to dig the foundation. They had to haul water in a tank from the river a quarter-mile away to mix the concrete. Sonny watched that interestedly. So did a number of the villagers, who gathered safely out of bowshot. They noticed Sonny among the Terrans and pointed at him. Sonny noticed that. He unobtrusively picked up a double-bitted ax and kept it to hand.

He and Mom had lunch with the contact team. As they showed no ill effects from breakfast, Fayon decided that it was safe to let them have anything the Terrans ate or drank. They liked wine; they knew what it was, all right, but this seemed to have a delightfully different flavor. They each tried a cigarette, choked over the first few puffs, and decided that they didn't like smoking.

"Mom gave us a lot of information, as far as she could, on the crops and animals. The big things, the size of rhinoceroses, are draft animals and nothing else; they're not eaten," Dorver said. "I don't know whether the meat isn't good, or is taboo, or they are too valuable to eat. They eat all the other three species, and

milk two of them. I have an idea they grind their grain in big stone mortars as needed."

That was right; he'd seen things like that.

"Willi, when you're over in the mountains, see if you can find something we can make millstones out of. We can shape them with sono-cutters; after they get the idea, they can do it themselves by hand. One of those big animals could be used to turn the mill. Did you get any words from her?"

Paul Meillard shook his head gloomily. "Nothing we can be sure of. It was the same thing as in the village, yesterday. She'd say something, I'd repeat it, and she'd tell us it was wrong and say the same thing over again. Lillian took recordings; she got the same results as last night. Ask her about it later."

"She has the same effect on Mom as on the others?"

"Yes. Mom was very polite and tried not to show it, but—"

Lillian took him aside, out of earshot of the two Svants, after lunch. She was almost distracted.

"Mark, I don't know what I'm going to do. She's like the others. Every time I open my mouth in front of her, she's simply horrified. It's as though my voice does something loathsome to her. And I'm the one who's supposed to learn to talk to them."

"Well, those who can do, and those who can't teach," he told her. "You can study recordings, and tell us what the words are and teach us how to recognize and pronounce them. You're the only linguist we have."

That seemed to comfort her a little. He hoped it would work out that way. If they could communicate with these people and did leave a party here to prepare for the first colonization, he'd stay on, to teach the natives Terran technologies and study theirs. He'd been expecting that Lillian would stay, too. She was the linguist; she'd have to stay. But now, if it turned out that she would be no help but a liability, she'd go back with the *Hubert Penrose*. Paul wouldn't keep a linguist who offended the natives' every sensibility with every word she spoke. He didn't want that to happen. Lillian and he had come to mean a little too much to each other to be parted now.

Paul Meillard and Karl Dorver had considerable difficulty with Mom, that afternoon. They wanted her to go with them and help trade for cattle. Mom didn't want to; she was afraid. They had to do a lot of play-acting, with half a dozen Marines pretending to guard her with fixed bayonets from some of Dave Questell's Navy construction men who had red bandannas on their heads to simulate combs before she got the idea. Then she was afraid to get into the contragravity lorry that was to carry the hoes and the wagon wheels. Sonny managed to reassure her, and insisted on going along, and he insisted on taking his ax with him. That meant doubling the guard, to make sure Sonny didn't lose his self-control when he saw

his former persecutors within chopping distance.

It went off much better than either Paul Meillard or Luis Gofredo expected. After the first shock of being air-borne had worn off, Mom found that she liked contragravity-riding; Sonny was wildly delighted with it from the start. The natives showed neither of them any hostility. Mom's lavender bathrobe and Sonny's green coveralls and big ax seemed to be symbols of a new and exalted status; even the Lord Mayor was extremely polite to them.

The Lord Mayor and half a dozen others got a contragravity ride, too, to the meadows to pick out cattle. A dozen animals, including a pair of the two-ton draft beasts, were driven to the Terran camp. A couple of lorry-loads of assorted vegetables were brought in, too. Everybody seemed very happy about the deal, especially Bennet Fayon. He wanted to slaughter one of the sheep-sized meat-and-milk animals at once and get to work on it. Gofredo advised him to put it off till the next morning. He wanted a large native audience to see the animal being shot with a rifle.

The water tower was finished, and the big spherical tank hoisted on top of it and made fast. A pump, and a filter-system were installed. There was no water for hot showers that evening, though. They would have to run a pipeline to the river, and that would entail a ditch that would cut through several cultivated fields, which, in turn, would provoke an uproar. Paul Meillard didn't want that happening until he'd concluded the cattle-trade.

Charley Loughran and Willi Schallenmacher had gone up to the ship on one of the landing craft; they accompanied the landing party that went down into the mountains. Ayesha Keithley arrived late in the afternoon on another landing craft, with five or six tons of instruments and parts and equipment, and a male Navy warrant-officer helper.

They looked around the lab Lillian had been using at one end of the headquarters hut.

"This won't do," the girl Navy officer said. "We can't get a quarter of the apparatus we're going to need in here. We'll have to build something."

Dave Questell was drawn into the discussion. Yes, he could put up something big enough for everything the girls would need to install, and soundproof it. Concrete, he decided; they'd have to wait till he got the water line down and the pump going, though.

There was a crowd of natives in the fields, gaping at the Terran camp, the next morning, and Gofredo decided to kill the animal—until they learned the native name, they were calling it Domesticated Type C. It was herded out where everyone could watch, and a Marine stepped forward unslung his rifle took a kneeling position, and aimed at it. It was a hundred and fifty yards away. Mom had come out to see what was going on; Sonny and Howell, who had been consulting

by signs over the construction of a wagon, were standing side by side. The Marine squeezed his trigger. The rifle banged, and the Domesticated-C bounded into the air, dropped, and kicked a few times and was still. The natives, however, missed that part of it; they were howling piteously and rubbing their heads. All but Sonny. He was just mildly surprised at what had happened to the Dom.-C.

Sonny, it would appear, was stone deaf.

As anticipated, there was another uproar later in the morning when the ditching machine started north across the meadow. A mob of Svants, seeing its relentless progress toward a field of something like turnips, gathered in front of it, twittering and brandishing implements of agriculture, many of them Terran-made.

Paul Meillard was ready for this. Two lorries went out; one loaded with Marines, who jumped off with their rifles ready. By this time, all the Svants knew what rifles would do beside make a noise. Meillard, Dorver, Gofredo and a few others got out of the other vehicle, and unloaded presents. Gofredo did all the talking. The Svants couldn't understand him, but they liked it. They also liked the presents, which included a dozen empty half-gallon rum demijohns, tarpaulins, and a lot of assorted knickknacks. The pipeline went through.

He and Sonny got the forge set up. There was no fuel for it. A party of Marines had gone out to the woods to the east to cut wood; when they got back, they'd burn some charcoal in the pit that had been dug beside the camp. Until then, he and Sonny were drawing plans for a wooden wheel with a metal tire when Lillian came out of the headquarters hut with a clipboard under her arm. She motioned to him.

"Come on over," he told her. "You can talk in front of Sonny; he won't mind. He can't hear."

"Can't hear?" she echoed. "You mean—?"

"That's right. Sonny's stone deaf. He didn't even hear that rifle going off. The only one of this gang that has brains enough to pour sand out of a boot with directions on the bottom of the heel, and he's a total linguistic loss."

"So he isn't a half-wit, after all."

"He's got an IQ close to genius level. Look at this; he never saw a wheel before yesterday; now he's designing one."

Lillian's eyes widened. "So that's why Mom's so sharp about sign-talk. She's been doing it all his life." Then she remembered what she had come out to show him, and held out the clipboard. "You know how that analyzer of mine works? Well, here's what Ayesha's going to do. After breaking a sound into frequency bands instead of being photographed and projected, each band goes to an analyzer of its own, and is projected on its own screen. There'll be forty of them, each for a band of a hundred cycles, from zero to four thousand. That seems to be the Svant vocal range."

The diagram passed from hand to hand during cocktail time, before dinner. Bennet Fayon had been working all day dissecting the animal they were all calling a *domsee*, a name which would stick even if and when they learned the native name. He glanced disinterestedly at the drawing, then looked again, more closely. Then he set down the drink he was holding in his other hand and studied it intently.

"You know what you have here?" he asked. "This is a very close analogy to the hearing organs of that animal I was working on. The comb, as we've assumed, is the external organ. It's covered with small flaps and fissures. Back of each fissure is a long, narrow membrane; they're paired, one on each side of the comb, and from them nerves lead to clusters of small round membranes. Nerves lead from them to a complex nerve-cable at the bottom of the comb and into the brain at the base of the skull. I couldn't understand how the system functioned, but now I see it. Each of the larger membranes on the outside responds to a sound-frequency band, and the small ones on the inside break the bands down to individual frequencies."

"How many of the little ones are there?" Ayesha asked.

"Thousands of them; the inner comb is simply packed with them. Wait; I'll show you."

He rose and went away, returning with a sheaf of photo-enlargements and a number of blocks of lucite in which specimens were mounted. Everybody examined them. Anna de Jong, as a practicing psychologist, had an M.D. and to get that she'd had to know a modicum of anatomy; she was puzzled.

"I can't understand how they hear with those things. I'll grant that the membranes will respond to sound, but I can't see how they transmit it."

"But they do hear," Meillard said. "Their musical instruments, their reactions to our voices, the way they are affected by sounds like gunfire—"

"They hear, but they don't hear in the same way we do," Fayon replied. "If you can't be convinced by anything else, look at these things, and compare them with the structure of the human ear, or the ear of any member of any other sapient race we're ever contacted. That's what I've been saying from the beginning."

"They have sound-perception to an extent that makes ours look almost like deafness," Ayesha Keithley said. "I wish I could design a sound-detector one-tenth as good as this must be."

Yes. The way the Lord Mayor said *fwoonk* and the way Paul Meillard said it sounded entirely different to them. Of course, *fwoonk* and *pwink* and *tweelt* and *kroosh* sounded alike to them, but let's don't be too picky about things.

There were no hot showers that evening; Dave Questell's gang had trouble with the pump and needed some new parts made up aboard the ship. They were still working on it the next morning. He had meant to start teaching Sonny

blacksmithing, but during the evening Lillian and Anna had decided to try teaching Mom a nonphonetic, ideographic, alphabet, and in the morning they co-opted Sonny to help. Deprived of his disciple, he strolled over to watch the work on the pump. About twenty Svants had come in from the fields and were also watching, from the meadow.

After a while, the job was finished. The petty officer in charge of the work pushed in the switch, and the pump started, sucking dry with a harsh racket. The natives twittered in surprise. Then the water came, and the pump settled down to a steady *thugg-thugg, thugg-thugg*.

The Svants seemed to like the new sound; they grimaced in pleasure and moved closer; within forty or fifty feet, they all squatted on the ground and sat entranced. Others came in from the fields, drawn by the sound. They, too, came up and squatted, until there was a semicircle of them. The tank took a long time to fill; until it did, they all sat immobile and fascinated. Even after it stopped, many remained, hoping that it would start again. Paul Meillard began wondering, a trifle uneasily, if that would happen every time the pump went on.

"They get a positive pleasure from it. It affects them the same way Luis' voice does."

"Mean I have a voice like a pump?" Gofredo demanded.

"Well, I'm going to find out," Ayesha Keithley said. "The next time that starts, I'm going to make a recording, and compare it with your voice-recording. I'll give five to one there'll be a similarity."

Questell got the foundation for the sonics lab dug, and began pouring concrete. That took water, and the pump ran continuously that afternoon. Concrete-mixing took more water the next day, and by noon the whole village population, down to the smallest child, was massed at the pumphouse, enthralled. Mom was snared by the sound like any of the rest; only Sonny was unaffected. Lillian and Ayesha compared recordings of the voices of the team with the pump-sound; in Gofredo's they found an identical frequency-pattern.

"We'll need the new apparatus to be positive about it, but it's there, all right," Ayesha said. "That's why Luis' voice pleases them."

"That tags me; Old Pump-Mouth," Gofredo said. "It'll get all through the Corps, and they'll be calling me that when I'm a four-star general, if I live that long."

Meillard was really worried, now. So was Bennet Fayon. He said so that afternoon at cocktail time.

"It's an addiction," he declared. "Once they hear it, they have no will to resist; they just squat and listen. I don't know what it's doing to them, but I'm scared of it."

"I know one thing it's doing," Meillard said. "It's keeping them from their

work in the fields. For all we know, it may cause them to lose a crop they need badly for subsistence.''

The native they had come to call the Lord Mayor evidently thought so, too. He was with the others, the next morning, squatting with his staff across his knees, as bemused as any of them, but when the pump stopped he rose and approached a group of Terrans, launching into what could only be an impassioned tirade. He pointed with his staff to the pump house, and to the semicircle of still motionless villagers. He pointed to the fields, and back to the people, and to the pump house again, gesturing vehemently with his other hand.

You make the noise. My people will not work while they hear it. The fields lie untended. Stop the noise, and let my people work.

Couldn't possibly be any plainer.

Then the pump started again. The Lord Mayor's hands tightened on the staff; he was struggling tormentedly with himself, in vain. His face relaxed into the heart-broken expression of joy; he turned and shuffled over, dropping onto his haunches with the others.

''Shut down the pump, Dave!'' Meillard called out. ''Cut the power off.''

The *thugg-thugg*-ing stopped. The Lord Mayor rose, made an odd salaamlike bow toward the Terrans, and then turned on the people, striking with his staff and shrieking at them. A few got to their feet and joined him, screaming, pushing, tugging. Others joined. In a little while, they were all on their feet, straggling away across the fields.

Dave Questell wanted to know what it meant; Meillard explained.

''Well, what are we going to do for water?'' the Navy engineer asked.

''Soundproof the pump house. You can do that, can't you?''

''Sure. Mound it over with earth. We'll have that done in a few hours.''

That started Gofredo worrying. ''This happens every time we colonize an inhabited planet. We give the natives something new. Then we find out it's bad for them, and we try to take it away from them. And then the knives come out, and the shooting starts.''

Luis Gofredo was also a specialist, speaking on his subject.

While they were at lunch, Charley Loughran screened in from the other camp and wanted to talk to Bennet Fayon.

''A funny thing, Bennet. I took a shot at a bird ... no, a flying mammal ... and dropped it. It was dead when it hit the ground, but there isn't a mark on it. I want you to do an autopsy, and find out how I can kill things by missing them.''

''How far away was it?''

''Call it forty feet; no more.''

''What were you using, Charley?'' Ayesha Keithley called from the table.

"Eight-point-five Mars-Consolidated pistol," Loughran said. "I'd laid my shotgun down and walked away from it—"

"Twelve hundred foot-seconds," Ayesha said. "Bow-wave as well as muzzle-blast."

"You think the report was what did it?" Fayon asked.

"You want to bet it didn't?" she countered.

Nobody did.

Mom was sulky. She didn't like what Dave Questell's men were doing to the nice-noise-place. Ayesha and Lillian consoled her by taking her into the sound-proofed room and playing the recording of the pump-noise for her. Sonny couldn't care less, one way or another; he spent the afternoon teaching Mark Howell what the marks on paper meant. It took a lot of signs and play-acting. He had learned about thirty ideographs; by combining them and drawing little pictures, he could express a number of simple ideas. There was, of course, a limit to how many of those things anybody could learn and remember—look how long it took an Old Terran Chinese scribe to learn his profession—but it was the beginning of a method of communication.

Questell got the pump house mounded over. Ayesha came out and tried a sound-meter, and also Mom, on it while the pump was running. Neither reacted.

A good many Svants were watching the work. They began to demonstrate angrily. A couple tried to interfere and were knocked down with rifle butts. The Lord Mayor and his Board of Aldermen came out with the big horn and harangued them at length, and finally got them to go back to the fields. As nearly as anybody could tell, he was friendly to and co-operative with the Terrans. The snooper over the village reported excitement in the plaza.

Bennet Fayon had taken an airjeep to the other camp immediately after lunch. He was back by 1500, accompanied by Loughran. They carried a cloth-wrapped package into Fayon's dissecting-room. At cocktail time, Paul Meillard had to go and get them.

"Sorry," Fayon said, joining the group. "Didn't notice how late it was getting. We're still doing a post on this svant-bat; that's what Charley's calling it, till we get the native name.

"The immediate cause of death was spasmodic contraction of every muscle in the thing's body; some of them were partly relaxed before we could get to work on it, but not completely. Every bone that isn't broken is dislocated; a good many both. There is not the slightest trace of external injury. Everything was done by its own muscles." He looked around. "I hope nobody covered Ayesha's bet, after I left. If they did, she collects. The large outer membranes in the comb seem to be unaffected, but there is considerable compression of the small round ones inside, in just one area, and more on the left side than on the right. Charley says it

was flying across in front of him from left to right.''

''The receptor-area responding to the frequencies of the report,'' Ayesha said.

Anna de Jong made a passing gesture toward Fayon. ''The baby's yours, Bennet,'' she said. ''This isn't psychological. I won't accept a case of psychosomatic compound fracture.''

''Don't be too premature about it, Anna. I think that's more or less what you have, here.''

Everybody looked at him, surprised. His subject was comparative technology. The bio and psycho-sciences were completely outside his field.

''A lot of things have been bothering me, ever since the first contact. I'm beginning to think I'm on the edge of understanding them, now. Bennet, the higher life-forms here—the people, and that domsee, and Charley's svant-bat—are structurally identical with us. I don't mean gross structure, like ears and combs. I mean molecular and cellular and tissue structure. Is that right?''

Fayon nodded. ''Biology on this planet is exactly Terra type. Yes. With adequate safeguards, I'd even say you could make a viable tissue-graft from a Svant to a Terran, or vice versa.''

''Ayesha, would the sound waves from that pistol-shot in any conceivable way have the sort of physical effect we're considering?''

''Absolutely not,'' she said, and Luis Gofredo said: ''I've been shot at and missed with pistols at closer range than that.''

''Then it was the effect on the animal's nervous system.''

Anna shrugged. ''It's still Bennet's baby. I'm a psychologist, not a neurologist.''

''What I've been saying, all along,'' Fayon reiterated complacently. ''Their hearing is different from ours. This proves it.

''It proves that they don't hear at all.''

He had expected an explosion; he wasn't disappointed. They all contradicted him, many derisively. Signal reactions. Only Paul Meillard made the semantically appropriate response:

''What do you mean, Mark?''

''They don't *hear* sound; they *feel* it. You all saw what they have inside their combs. Those things don't transmit sound like the ears of any sound-sensitive life-form we've ever seen. They transform sound waves into tactile sensations.''

Fayon cursed, slowly and luridly. Anna de Jong looked at him wide-eyed. He finished his cocktail and poured another. In the snooper screen, what looked like an indignation meeting was making uproar in the village plaza. Gofredo cut the volume of the speaker even lower.

''That would explain a lot of things,'' Meillard said slowly. ''How hard it was

for them to realize that we didn't understand when they talked to us. A punch in the nose feels the same to anybody. They thought they were giving us bodily feelings. They didn't know we were insensible to them.''

''But they do ... they do have a language,'' Lillian faltered. ''They talk.''

''Not the way we understand it. If they want to say, 'Me,' it's *tickle-pinch-rub*, even if it sounds like *fwoonk* to us, when it doesn't sound like *pwink* or *tweelt* or *kroosh*. The tactile sensations, to a Svant, feel no more different than a massage by four different hands. Analogous to a word pronounced by four different voices, to us. They'll have a code for expressing meanings in tactile sensation, just as we have a code for expressing meanings in audible sound.''

''Except that when a Svant tells another, 'I am happy,' or 'I have a stomachache,' he makes the other one feel that way too,'' Anna said. ''That would carry an awful lot more conviction. I don't imagine symptom-swapping is popular among Svants. Karl! You were nearly right, at that. This isn't telepathy, but it's a lot like it.''

''So it is,'' Dorver, who had been mourning his departed telepathy theory, said brightly. ''And look how it explains their society. Peaceful, everybody in quick agreement—'' He looked at the screen and gulped. The Lord Mayor and his party had formed one clump, and the opposition was grouped at the other side of the plaza; they were screaming in unison at each other. ''They make their decisions by endurance; the party that can resist the feelings of the other longest converts their opponents.''

''Pure democracy,'' Gofredo declared. ''Rule by the party that can make the most noise.''

''And I'll bet that when they're sick, they go around chanting, 'I am well; I feel just fine!'" Anna said. ''Autosuggestion would really work, here. Think of the feedback, too. One Svant has a feeling. He verbalizes it, and the sound of his own voice re-enforces it in him. It is induced in his hearers, and they verbalize it, re-enforcing it in themselves and in him. This could go on and on.''

''Yes. It has. Look at their technology.'' He felt more comfortable, now he was on home ground again. ''A friend of mine, speaking about a mutual acquaintance, once said, 'When they installed her circuits, they put in such big feeling circuits that there was no room left for any thinking circuits.' I think that's a perfect description of what I estimate Svant mentality to be. Take these bronze knives, and the musical instruments. Wonderful; the work of individuals trying to express feeling in metal or wood. But get an idea like the wheel, or even a pair of tongs? Poo! How would you state the First Law of Motion, or the Second Law of Thermodynamics, in tickle-pinch-rub terms? Sonny could grasp an idea like that. Sonny's handicap, if you call it that, cuts him off from feel-thinking; he can think logically instead of sensually.''

He sipped his cocktail and continued: ''I can understand why the village is

mounded up, too. I realized that while I was watching Dave's gang bury the pump house. I'd been bothered by that, and by the absence of granaries for all the grain they raise, and by the number of people for so few and such small houses. I think the village is mostly underground, and the houses are just entrances, sound-proofed, to shelter them from uncomfortable natural noises—thunderstorms, for instance."

The horn was braying in the snooper-screen speaker; somebody wondered what it was for. Gofredo laughed.

"I thought, at first, that it was a war-horn. It isn't. It's a peace-horn," he said. "Public tranquilizer. The first day, they brought it out and blew it at us to make us peaceable."

"Now I see why Sonny is rejected and persecuted," Anna was saying. "He must make all sorts of horrible noises that he can't hear ... that's not the word; we have none for it ... and nobody but his mother can stand being near him."

"Like me," Lillian said. "Now I understand. Just think of the most revolting thing that could be done to you physically; that's what I do to them every time I speak. And I always thought I had a nice voice," she added, pathetically.

"You have, for Terrans," Ayesha said. "For Svants, you'll just have to change it."

"But how—?"

"Use an analyzer; train it. That was why I took up sonics, in the first place. I had a voice like a crow with a sore throat, but by practicing with an analyzer, an hour a day, I gave myself an entirely different voice in a couple of months. Just try to get some pump-sound frequencies into it, like Luis'."

"But why? I'm no use here. I'm a linguist, and these people haven't any language that I could ever learn, and they couldn't even learn ours. They couldn't learn to make sounds, as sounds."

"You've been doing very good work with Mom on those ideographs," Meillard said. "Keep it up till you've taught her the Lingua Terra Basic vocabulary, and with her help we can train a few more. They can be our interpreters; we can write what we want them to say to the others. It'll be clumsy, but it will work, and it's about the only thing I can think of that will."

"And it will improve in time," Ayesha added. "And we can make vocoders and visibilizers. Paul, you have authority to requisition personnel from the ship's company. Draft me; I'll stay here and work on it."

The rumpus in the village plaza was getting worse. The Lord Mayor and his adherents were being out-shouted by the opposition.

"Better do something about that in a hurry, Paul, if you don't want a lot of Svants shot," Gofredo said. "Give that another half hour and we'll have visitors,

with bows and spears.''

''Ayesha, you have a recording of the pump,'' Meillard said. ''Load a record-player onto a jeep and fly over the village and play it for them. Do it right away. Anna, get Mom in here. We want to get her to tell that gang that from now on, at noon and for a couple of hours after sunset, when the work's done, there will be free public pump-concerts, over the village plaza.''

Ayesha and her warrant-officer helper and a Marine lieutenant went out hastily. Everybody else faced the screen to watch. In fifteen minutes, an airjeep was coming in on the village. As it circled low, a new sound, the steady *thugg-thugg, thugg-thugg* of the pump, began.

The yelling and twittering and the blaring of the peace-horn died out almost at once. As the jeep circled down to housetop level, the two contending faction-clumps broke apart; their component individuals moved into the center of the plaza and squatted, staring up, letting the delicious waves of sound caress them.

''Do we have to send a detail in a jeep to do that twice a day?'' Gofredo asked. ''We keep a snooper over the village; fit it with a loud-speaker and a timer; it can give them their *thugg-thugg*, on schedule, automatically.''

''We might give the Lord Mayor a recording and a player and let him decide when the people ought to listen—if that's the word—to it,'' Dorver said. ''Then it would be something of their own.''

''No!'' He spoke so vehemently that the others started. ''You know what would happen? Nobody would be able to turn it off; they'd all be hypnotized, or doped, or whatever it is. They'd just sit in a circle around it till they starved to death, and when the power-unit gave out, the record-player would be surrounded by a ring of skeletons. We'll just have to keep on playing it for them ourselves. Terrans' Burden.''

''That'll give us a sanction over them,'' Gofredo observed. ''Extra *thugg-thugg* if they're very good; shut it off on them if they act nasty. And find out what Lillian has in her voice that the rest of us don't have, and make a good loud recording of that, and stash it away along with the rest of the heavy-weapons ammunition. You know, you're not going to have any trouble at all, when we go down-country to talk to the king or whatever. This is better than fire-water ever was.''

''We must never misuse our advantage, Luis,'' Meillard said seriously. ''We must use it only for their good.''

He really meant it. Only—You had to know some general history to study technological history, and it seemed to him that that pious assertion had been made a few times before. Some of the others who had made it had really meant it, too, but that had made little difference in the long run.

Fayon and Anna were talking enthusiastically about the work ahead of them.

''I don't know where your subject ends and mine begins,'' Anna was saying.

"We'll just have to handle it between us. What are we going to call it? We certainly can't call it hearing."

"Nonauditory sonic sense is the only thing I can think of," Fayon said. "And that's such a clumsy term."

"Mark; you thought of it first," Anna said. "What do you think?"

"Nonauditory sonic sense. It isn't any worse than Domesticated Type C, and that got cut down to size. *Naudsonce*."

NO CHARGE FOR ALTERATIONS

"Wanta know what's wrong with women these days? Spoiled! The whole kit and kaboodle of 'em. They want to sing in nightclubs and hook up with some millionaire and wear beautiful clothes. Housework is something for gadgets to take care of, with maids to run the gadgets. Afraid to get a few calluses on their dainty hands!

"*We got a way to handle that on Deneb. A girl gets highfalutin up there, the Doc puts her in the Ego Alter room. Thicken up her ankles a little, take some of the sparkle out of her eyes and hair, and you get a woman fit to pull a plow!*"

Hold it, Madam! H. L. Gold said that; not us. Personally, we like girls—not Percherons!

If there was one thing Dr. Kalmar hated, and there were many, it was having a new assistant fresh from a medical school on Earth. They always wanted to change things. They never realized that a planet develops its own techniques to meet its own requirements, which are seldom similar to those of any other world. Dr. Kalmar never got along with his assistants and he didn't expect to get along with this young Dr. Hoyt who was coming in on the transfer ship from Vega.

Dr. Kalmar had been trained on Earth himself, of course, but he wistfully remembered how he had revered Dr. Lowell when he had been Lowell's assistant. He'd known that his own green learning was no match for Dr. Lowell's wisdom and experience after 30 years on Deneb, and he had avidly accepted his lessons.

Why, he grumbled to himself on his way to the spaceport to meet the unknown whippersnapper, why didn't Earth turn out young doctors the way it used to? They ought to have the arrogance knocked out of them before they left medical school. That's what must have happened to him, because his attitude had certainly been humble when he landed.

The spaceport was jammed, naturally. Ship arrivals were infrequent enough to bring everybody from all over the planet who was not on duty at the farms, mines, factories, freight and passenger jets and all the rest of the busy activities of this comparatively new colony. They brought their lunches and families and stood around to watch. Dr. Kalmar went to the platform.

The ship sat down on a mushroom of fire that swiftly became a flaming pancake and then was squashed out of existence.

"I'm waiting for a shipment of livestock," enthused the man standing next to Dr. Kalmar.

"You're lucky," the doctor said. "They can't talk back."

The man looked at him sympathetically. "Meeting a female?"

"Gabbier and more annoying," said Dr. Kalmar, but he didn't elaborate and the man, with the courtesy of the frontier, did not pry for an explanation.

Livestock and freight came down on one elevator and passengers came down another. Slidewalks carried the cargo to Sterilization and travelers to the greeting platform. Dr. Kalmar felt his shoulders droop. The man with the medical bag had to be Dr. Hoyt and he was even more brisk, erect and muscular than Dr. Kalmar had expected, with a superior and inquisitive look that made the last assistant, unbearable as he'd been, seem as tractable as one of the arriving cows.

Dr. Hoyt spotted him instantly and came striding over to grab his hand in a grip like an ore-crusher. "You're Dr. Kalmar. Glad to know you. I'm sure we'll get along fine together. Miserable trip. Had to change ships four times to get here. Hope the food's better than shipboard slop. Got a nice hospital to work in? Do I live in or out?"

Dr. Kalmar was grudgingly forced to say rapidly, "Right. Likewise. I hope so. Too bad. Suits us. I think so. In."

He got Dr. Hoyt into a jetcab and told the driver to make time back to the hospital. Appointments were piling up while he had to make the courtesy trip out to the spaceport, which was another nuisance. Now he'd have all of those and a talkative assistant who'd want to know the reasons for everything.

"Pretty barren," said Dr. Hoyt, looking out the window at the vegetationless ground below. "Why's that?"

He'd known he was going to Deneb, Dr. Kalmar thought angrily. The least he could have done was read up on the place. *He* had.

"It's an Earth-type planet," Dr. Kalmar said in a blunt voice, "except that life never developed on it. We had to bring everything—benign germ cultures, seed, animals, fish, insects—a whole ecology. Our farms are close to the cities. Too wasteful of freight to move them out very far. Another few centuries and we'll have a *real* population, millions of people instead of the 20,000 we have now in a couple of dozen settlements around this world. Then we'll have the whole place a nice shade of green."

"City boy myself," said Dr. Hoyt. "Hate the country. Hydroponics and synthetic meat—that's the answer."

"For Earth. It'll be a long time before we get that crowded here on Deneb."

"Deneb," the young doctor repeated, dissatisfied. "That's the name of the star. You mean to tell me the planet has the same name?"

"Most solar systems have only one Earth-type planet. It saves a lot of trouble to just call that planet Deneb, Vega or whatever."

"Is *that* clutch of shacks the *city*?" exclaimed Dr. Hoyt.

"Denebia," said Dr. Kalmar, beginning to enjoy himself finally.

"Why, you could lose it in a suburb or Bosyorkdelphia!"

"That monstrosity that used to be New York, Pennsylvania, Connecticut, Rhode Island and Massachusetts? I wouldn't want to."

He was pleased when Dr. Hoyt sank into stunned silence. If luck was with him, that stupefaction might last the whole day. It seemed as though it might, for the sight of the modest little hospital was too much for the youngster who had just come from the mammoth health factories of Earth.

Dr. Hoyt revived somewhat when he saw the patients waiting in the scantily furnished outer room, but Dr. Kalmar said, "Better get yourself settled," and opened a door for his immature colleague.

"But there's only one bed in this room," Dr. Hoyt objected. "You must have made a mistake."

Dr. Kalmar, recalling the crowded cubicles of Earth, gave out a proud little dry laugh. "You're on Deneb now, boy. Here you'll have to get used to spaciousness. We like elbow room."

The young doctor went in hesitantly, leaving the door open for a fast escape in case an error had been made. Dr. Kalmar had done the same when he'd arrived nine years ago. Judging by his own experience, it would take Dr. Hoyt a full six months to get used to having a room all to himself. There would be plenty of time to start showing him the ropes tomorrow, and in the meantime there were the backed-up appointments to be taken care of.

Dr. Kalmar went to his office and had his nurse, Miss Dupont, send in the first patient.

It was a girl of 17, Avis Emery, who had been brought by her parents. She sat sullenly, dark-haired, too daintily pretty and delicately shapely for a frontier world like this, while Mr. Emery put the file from Social Control on the doctor's desk.

"We're farmers—" the man began.

Dr. Kalmar interrupted, "The information is in the summary. Avis is to be assigned her mate next year, but she wants to go to Earth and become a nightclub singer. She refuses to marry a boy who'd be able to help around the farm, and she won't work on it herself."

He looked up severely at the parents. "This is your own fault, you know. You pampered her. Farm labor is too valuable for pampering. We can't afford it."

"You can blame me, Doc," said Mr. Emery miserably. "She's such a pretty little thing—I couldn't work her the way Sue and I work ourselves."

"And then she started getting notions," Mrs. Emery added, giving her husband a vicious glare. Dr. Kalmar could imagine the nights of argument and accusation before they were at last forced to go for medical help to solve their self-created problem. "Singing in nightclubs back on Earth, marrying a billionaire, living in a sky yacht!"

"Avis," said Dr. Kalmar gently. "You know it's not that easy, don't you? There are lots and lots of pretty girls on Earth and very few billionaires. If you did get a job singing in a nightclub, you know you'd have to do some unpleasant things because there's so much competition for customers. Things like stripteasing, drinking at the tables and going out with whoever the owner tells you to."

The girl's face grew animated for the first time. "Well, sure! Why do you think I want to go?"

"And you don't love Deneb and your farm?"

"I hate both of them!"

"But you realize that we must have food. Doesn't it make you feel important to grow more food so we can increase our population?"

"No! Why should I care? I want to go to Earth!"

Dr. Kalmar shook his head regretfully. He pushed a button on his desk. It was connected to a gravity generator directly under the girl's chair. Four gravities suddenly pushed her down into it and a hypodermic needle jabbed her swiftly with a hypnotic drug. She slumped. He released the button and the artificial gravity abated, but she remained dazed and relaxed.

"You're not going to hurt her, are you, Doc?" Mr. Emery begged.

"Certainly not. But I suppose you know Social Control's orders."

They nodded, the husband gloomily, the wife with a single sharp jerk of her head.

"You go right ahead and do it," she said. "I'm sick of working my fingers to the bone while she primps and preens and talks all the time about going to Earth."

"Come, Avis," Dr. Kalmar said in a low, commanding voice.

She stood up, blank-faced, and followed him out to the Ego Alter room. He closed the door, sat her down in the insulated seat next to the control console, put the wired plastic helmet on her and adjusted it to fit her skull snugly.

Running his finger down the treatment sheet of her Social Control file, he set the dials according to its instructions. The psychic areas to be reduced were sex drive, competitiveness and imagination, while the areas of reproductive urge and cooperation were to be intensified. He regulated the individual timers and sent the varying charge through her brain.

There was no reaction, no convulsion, no distortion of features. She sat there as if nothing had happened, but her personality had changed as completely as though she had been retrained from birth.

Miss Dupont came in without knocking. She knew, of course, that any patient in the Ego Alter room would be incapable of being disturbed.

"Rephysical, Dr. Kalmar?" she asked.

"I'm afraid so. Will you prepare her, please?"

The nurse removed the girl's clothes. There was no resistance.

"Such a lovely body," she said. "It's a shame."

He shrugged. "Until we have enough people and farms and industries, Miss Dupont, we'll just have to get used to altering people to fit the needs of our society. I'm sure you understand that."

"Yes, but it still seems a shame. Bodies like that don't grow on trees."

He gently moved the girl into the Rephysical Chamber. "They grow in this machine, though. As soon as we can afford it, which ought to be only a few hundred years from now, we can make any woman look like this, or even better."

"And don't forget the men," Miss Dupont said as he started the mitogenetic generator. "We could use some Adonises around here."

"We'll have them," he assured her.

"Somebody will. None of us'll live that long."

Working like a sculptor with a cathode in one hand and an anode in the other, Dr. Kalmar began reshaping the girl who stood fixedly in the boxlike chamber. The flesh fled from the cathode and chased after the anode as he broadened the fine nose, thickened the mobile lips, squared the slender jaw and drew out carefully the delicately arched orbital ridges.

"I'll leave the curl in her hair," he said. "Every woman needs at least one feature she can be proud of."

"You're telling me," Miss Dupont replied.

"Synthetic tissue, please."

She drew out a tube with a variable nozzle and started working just ahead of him. A spray of high-velocity cells shot through the girl's smooth skin at the neck, shoulders, breasts, hips and legs, forming shapeless lumps that he guided into cords and muscles. The slim figure quickly broadened, grew brawny and competent-looking, the body of a woman who could breed phenomenally while farming alongside her man.

Dr. Kalmar racked up the instruments and helped Miss Dupont dress the girl in coveralls and sandals. He felt the pride of craftsmanship when he found that the clothing supplied for her by Social Control exactly fitted her. He injected an antidote to the hypnotic and gave her the standard test for emotional response as her

expressionless face cleared to placidity.

"Do you know where you are, Avis?"

"Yes. Ego Alter and Rephysical."

"What have we done to you?"

"Changed me to fit my environment."

"Do you resent being changed?"

"No." She paused and looked worried. "Who's taking care of the crops while I'm here?"

"They can wait till you and your parents get back, Avis. Let's show them the change, shall we?"

"All right," she said. "I think they'll be proud of me. This is how they always wanted me to be."

"And you?"

"Oh, I feel much better. As if I don't have to try so hard."

"I'm glad, Avis. Miss Dupont, better have a sedative ready when her father sees her. I think he'll need it."

"And her mother?" asked the nurse practically.

"She'll probably want a drink to celebrate. Give her one."

Dr. Kalmar's prognosis was correct, only it didn't go far enough. His young assistant from Earth had come scooting out of his disquietingly large quarters and was jittering in the office when they entered.

"Is *that* the pretty girl who was waiting when we came in?" he yelped in outrage. "What have you done to her?"

Dr. Kalmar gave the sedative to him instead of Mr. Emery, who was shocked, but had known in advance what to expect. Miss Dupont prepared another sedative quickly, gave Mrs. Emery a celebration drink and moved the family toward the door.

"She looks fine, Doctor," the mother said happily. "Avis ought to be a big help around the house and farm from now on."

"I'm sure she will," he said.

"But she was so lovely!" wept Mr. Emery, though in a rapidly becalming voice as the sedative took effect.

The door closed behind them.

"You ought to be reported to the Medical Association back on Earth!" Dr. Hoyt said angrily. "Ruining a girl's looks like that!"

Dr. Kalmar sighed. He had hoped to be able to put off this orientation lecture until the following day, when there wouldn't be so many patients jamming his appointment book.

"All right, let's get it over with. First, I was also trained on Earth and know how Ego Alter and Rephysical are used there: Ego Alter to remove psychic blocks so people can compete better, and Rephysical so they'll be more attractive. Second, we're not under the jurisdiction of Earth's Medical Association. Third, we'd damn well better not be, because our problems and solutions aren't the same at all."

"You'd have been jailed for spoiling that girl's chances of a good marriage!"

"I didn't," Dr. Kalmar said quietly. "I improved them."

"You did nothing of the—" Dr. Hoyt stopped. "Improved? How?"

"I keep telling you this is a frontier world and you keep acting as if you understand, but you don't. Look, a family is an economic liability on Earth; it consumes without producing. That's why girls have so much trouble finding husbands there. Out here it's different. A family is an asset—if every member in it is willing to work."

"But a pretty girl like that can always get by."

"No Denebian can afford to marry a pretty girl. It's too risky. She can't work as hard as we do and still take care of her looks. And he'd worry about her constantly, which would cut into his efficiency. By having me make her a merely attractive girl in a wholesome, hearty way, Social Control guarantees more than just a marriage for her—it guarantees a contented married life."

"Sweating away on a farm," Dr. Hoyt said.

"Now that her anti-social strivings are gone, she'll realize that Deneb needs farmers instead of nightclub singers. She'll take pride in being a good worker, she'll raise as many children as she'll be capable of bearing, and she'll have a good husband and a prosperous farm. That wouldn't have satisfied her before. It will now. And she's better for it and so is Deneb."

Dr. Hoyt shook his head. "It's all upside down."

"You'll get used to it. Why not take today off and explore Denebia? You need a rest after all those months in space."

"Maybe I will," said Dr. Hoyt vaguely, slightly anesthetized.

"Good." Dr. Kalmar buzzed for Miss Dupont. "Send in the next patient, please. Oh, and Dr. Hoyt is taking the day off."

But the young assistant was stunned into staying by the huge size of the Social Control file that was carried by the next patient, Mr. Fallon, and his wife.

"I know just what you're thinking, Dr. Kalmar!" cried Mrs. Fallon distractedly, but with a nervously bright smile. "Those awful Fallons again! I don't blame you a bit, but—"

As a matter of fact, that was exactly what Dr. Kalmar was thinking, plus the defeated feeling that they were all he needed to make the day complete.

"Good Lord, what's in all those files?" Dr. Hoyt exclaimed.

Dr. Kalmar could have explained, but he didn't feel up to it.

Mr. Fallon, a wispy, shyly affable, poetic-looking chap, did it for him. "Papers," he said.

"I know that, but why so many?" Dr. Hoyt asked impatiently.

Miss Dupont seemed wryly amused as she watched his consternation.

"I guess you might say it's because I can't make my mind up," confessed Mrs. Fallon with an uneasy giggle. She was a big woman who might have gurgled over a collection of toy dogs on Earth, but here she was a freight checker and her husband was a statistician in the Department of Supply, though on Earth he might have been anything from a composer to a social worker. "No matter how often we rephysical Harry, I always get tired of his looks in a few months."

"And how often has that been done?" Dr. Hoyt demanded.

"I think it's eleven times. Isn't that right, dear?"

"No, sweet," said Mr. Fallon. "Thirteen."

Dr. Kalmar could have interrupted, but he considered it wiser to let his assistant learn the hard way. Miss Dupont was enjoying it too much to interfere.

"We've made him tall and we've made him short, skinny, fat, bulging with muscle, red hair, black hair, blond hair, gray hair—I don't know, just about everything in the book," said Mrs. Fallon, "and I simply can't seem to find one I'd like for keeps."

"Then why the devil don't you get another husband?"

Mrs. Fallon looked shocked. "Why, he was assigned to me!"

"Dr. Hoyt just came from Earth," Dr. Kalmar cut in at last, before a brawl could start. "He's not familiar with our methods."

"Let's hear the cockeyed reason," Dr. Hoyt said resignedly.

"We keep our population balanced," said Dr. Kalmar. "Too many of either sex creates tension, hostility, loss of efficiency; look at Earth if you want proof. We can't risk even a little of that, so we use prenatal sex control to keep them exactly equal."

"There's a wife for every man," Mr. Fallon put in genially, "and a husband for every woman. Works out fine."

"With no surplus," Dr. Kalmar added. "There are no floaters to allow the kind of marital moving day you have on Earth, where so many just up and shift over to new mates. We get ours for life. That's where Ego Alter and Rephysical come in."

"You mean people bring in their mates to have them done over?"

"If they're not satisfied and if the mates agree to be changed."

"I don't mind," said Mr. Fallon virtuously. "I figure Mabel will decide what

she wants one of these changes, and then we can settle down and be happy with each other.''

''But what about you?'' asked Dr. Hoyt, bewildered. ''Don't you want her changed?''

''Oh, no. I like her fine just as she is.''

''You see now how it works?'' Dr. Kalmar asked. ''We can't have a variety of mates, but we can have all the variety we want in one mate. It comes to the same thing, as far as I can see, and causes much less confusion, especially since we need stable relationships.''

Dr. Hoyt was striving heroically to stay indignant in spite of the sedative. ''And do many ask to have their mates changed?''

''I guess we're a sort of record, aren't we?'' Mr. Fallon boasted.

''I guess you are,'' agreed Dr. Kalmar. ''And now, Dr. Hoyt, if there aren't any more questions, I'd like to proceed with this couple.''

Dr. Hoyt stretched his eyes wide to keep them open. ''It's all screwy to me, but it's none of my business. As soon as I finish my internship, I'm heading back to Earth, where things make sense, so I don't have to understand this mishmash you call a planet. Need help?''

''If you'd find out what Mrs. Fallon has in mind this time, it would let me run the patients through a lot faster.''

''How would they feel about it?'' Dr. Hoyt asked.

''It's all right with me,'' Mr. Fallon said amiably. ''I'm pretty used to this, you know.''

''But what are we going to make you look like, Harry?'' his wife fretted. ''I felt very jealous of other women when you were handsome and I didn't like you just ordinary-looking.''

''Why not go through the model book with Dr. Hoyt?'' suggested Dr. Kalmar. ''There are still some types you haven't tried.''

''There *are*?'' she asked in gratified astonishment. ''Would you mind very much, Dr. Hoyt?''

''Glad to,'' he said.

Miss Dupont brought out the model book for him, and he and Mrs. Fallon studied the facial and physical types that were very explicitly illustrated there in three-dimensional full color. Mr. Fallon, contentedly working out math problems on a sheet of paper, left the choice entirely to her.

Meanwhile, Dr. Kalmar and Miss Dupont swiftly took care of a succession of other patients, raising the tolerance level of frustration in a watchmaker, replating the acne-pitted skin of a sensitive youth, restoring a finger lost in a machine-shop accident, and building up good-natured aggression in an ore miner whose pro-

ductivity had slumped.

Mrs. Fallon still hadn't decided when the last patient had been taken care of. She said unhappily, "I don't know. I simply absolutely don't know. Couldn't you suggest *something*, Dr. Hoyt?"

"Wouldn't be ethical," he told her bluntly. "Not allowed to."

Dr. Kalmar, checking the Social Control papers with Miss Dupont, wondered if he should interfere. It would lower confidence in Dr. Hoyt, which meant that people would insist on Dr. Kalmar's treating them. Then, instead of having an assistant to remove some of the load, he'd have to do the work of two men. He decided to let the young doctor handle it.

But Dr. Hoyt stood up in exasperation, slammed the book shut, and said, "Mrs. Fallon, if you know what you want, I'll be glad to oblige. But I'm not a telepathy.."

"Is there anything I can do?" Dr. Kalmar interrupted quickly, before his assistant could create any more damage.

"He doesn't have to get huffy," Mrs. Fallon said indignantly. "All I asked for was a suggestion or two."

"Insult my wife, will he?" Mr. Fallon belligerently added.

"It's my fault," Dr. Kalmar said. "Dr. Hoyt just got in today from Earth and he's tired and he naturally doesn't understand all our ways yet—"

"*Yet?*" Dr. Hoyt repeated in disgust. "What makes you think I'll ever—"

"And I shouldn't have burdened him with this problem until he's had a chance to rest up and look around," Dr. Kalmar continued in a slightly louder voice. "Now, let's see if we can't settle this problem before closing time, eh?"

The Fallons subsided, Dr. Hoyt watched with a sarcastic eye, though he kept silent as Dr. Kalmar and Miss Dupont, working as a shrewd team, gave them the suggestion they had been looking for. It was all done very smoothly, so smoothly that Dr. Kalmar felt professional pride because even his stiff-necked assistant was unable to detect the fact that it *was* a suggestion.

Dr. Kalmar got Mrs. Fallon to reminisce about the alterations her husband had undergone, and Miss Dupont promptly agreed with her when she explained why each had been unsatisfactory. It took some time, but he eventually brought her back to what Mr. Fallon had looked like when she'd first married him.

"Now, isn't that the strangest thing?" she said, puzzled. "I can't remember. Can you, dear?"

"It's a little mixed up," Mr. Fallon admitted. "Let's see, I know I was taller and I think I had a long, thin face—"

"Oh, we don't have to guess," Dr. Kalmar said. "Nurse, we have the information on file, don't we?"

"Yes, Doctor," she said, and instantly produced a photograph. They evidently

thought it was merely filing efficiency; they hadn't noticed her searching for the picture quietly while Dr. Kalmar had been leading them on. He had, in fact, delayed asking her until she'd nodded to indicate that she had found it.

Mr. Fallon frowned as if he'd recognized the face but couldn't remember the name. His wife gave a little shriek of admiration.

"Why, Harry, you looked perfectly wonderful!"

"Those deep dimples made shaving pretty hard," he recalled.

"But they're *darling*! Why did you ever let me change you?"

"Because I wanted you to be happy, sweet."

It was as simple as that—a bit of practical psychology based on knowledge of the patients. Dr. Kalmar wished wistfully that old Dr. Lowell had been there to observe. He would have approved, which might have made up for Dr. Hoyt's unpleasant expression.

"I hope this is the one you want," Dr. Kalmar said as he took them to the front door after the rephysical.

"Goodness, I hope so!" Mrs. Fallon exclaimed. She looked fondly at her husband, and this time had to look up to see his face. "I'm almost *positive* this is what I want Harry to be."

"Well, if it isn't, sweet," Mr. Fallon said, "we'll try something else. I don't mind as long as it makes you happy."

They closed the door behind them, leaving the hospital empty of all but the small staff.

"They're crazy!" Dr. Hoyt exploded. "He's not the one we should be changing. That idiotic female needs a good Ego Alter!"

"He hasn't asked for it," Dr. Kalmar pointed out patiently.

"Then he ought to!"

"That's his decision, isn't it? There's such a thing as ethics, you know."

"I've never seen anything more insane than the way you work," snapped Dr. Hoyt. "I can't wait to finish my stretch here and go home."

He stamped out, weaving slightly because of the sedative.

"Well, what do you think of our assistant?" asked Dr. Kalmar.

"He's cute," Miss Dupont said irrationally.

Dr. Kalmar glowered at her. He'd forgotten that she was due to have a mate assigned to her this year.

Routine at the hospital was anything but routine. Dr. Hoyt barely kept from yelping each time someone was treated, and his help was given so unwillingly that Dr. Kalmar, sweating under a double load and with Dr. Hoyt to argue with at the same time, was all for putting him on the ship and asking Earth for another

intern. But Miss Dupont talked him out of it.

For no discernible reason other than loneliness, Dr. Hoyt was taking her out. She was pleased, even though he crabbed constantly about the shabby-looking clothes she wore, which were typical of Deneb, and the way they fitted her.

Either the two of them didn't talk shop, or she had no influence with him—his criticism and impatience grew sharper each week.

It bothered Dr. Kalmar more than he thought it should, and much more than Mrs. Kalmar wanted it to. She was a pleasant little woman who liked things as they were, which was why Dr. Kalmar had hesitated all this while to ask her to undergo a slight rephysical; he would have preferred her a little taller, more filled out, her slight wrinkles deleted and, while he was thinking about it, he wished she'd let him give her space-black hair instead of her indeterminately blondish mop. But he'd rather have her as she was than peevish, so he had never mentioned it.

"Don't let the boy upset you, she said. "It's only that he's so young and inexperienced. You can't expect him to adjust quickly to a new environment and a whole new medical orientation."

"But that's just what annoys me! Why, I used to hang onto every word of Dr. Lowell's when I came here! I never thought I knew better than he did."

"Well, dear, you're you and Dr. Lowell is Dr. Lowell and Dr. Hoyt is Dr. Hoyt."

He tried to think of an answer and couldn't. "I suppose so."

"Maybe you'd feel better if you spoke to Dr. Lowell about it."

"What could he do? This is really an internal problem that I should work out with Dr. Hoyt. I can't involve Dr. Lowell in it."

But it became intolerable when there was a young girl who wanted to be a boy and Dr. Kalmar and Dr. Hoyt got into the worst battle yet. Naturally, she had to be given an Ego Alter to make her happy about being a girl, whereas Dr. Hoyt argued that she should be allowed to be a boy if that was what she wanted. Dr. Kalmar explained angrily once more that the sexes were exactly balanced and Dr. Hoyt quoted the rule of personal choice. It was applicable on Earth, but not on Deneb, Dr. Kalmar retorted, to which Dr. Hoyt snorted something about playing God.

Dr. Kalmar confessed harshly to his wife that she was right. He had to bring old Dr. Lowell into the situation; it was out of Dr. Kalmar's control and was keeping the hospital in a turmoil. It was time for Dr. Lowell to inspect the hospital, the job he had taken in place of actual retirement. Dr. Kalmar needed help from Miss Dupont to bring the problem out into the open. But she became unexpectedly obstinate.

"I won't hurt Leo's career," she explained flatly.

Dr. Kalmar gave her a vacant look. "Leo?"

She blushed. "Dr. Hoyt. He's honestly trying to understand, but he finds it so different from Earth. Practically everything we do here is in reverse."

"But so is our environment, Miss Dupont. Earth is over-crowded and Deneb is under-populated, so of course our methods would be the opposite of Earth's. He has to be made to see that we must solve our problems our own way."

She studied his face suspiciously. "That's all you want?"

"Certainly. Damn it, do you think I want him fired and sent back to Earth before his internship's up? I know it would hurt his record. Besides, I need an assistant—but not one I have to bicker with every time I make a move."

"Well, in that case—"

"Good girl. All you have to do is help me hold off the cases he'd argue about until Dr. Lowell gets here." He stared down glumly at his hands, which were gripping each other tightly. "God knows I'm no diplomat. Dr. Lowell is. He convinced me easily enough when I came here. Maybe he can do the same with Dr. Hoyt."

"Oh, I hope he can," Miss Dupont said earnestly. "I want so much to have you and Leo work together in harmony."

He glanced up, curious. "Why?"

"Because I'm in love with him."

He found himself nodding bitterly. Having Dr. Hoyt go back to Earth wouldn't be a fraction as bad as Miss Dupont leaving with him. So now there was something else to worry about.

Dr. Lowell came bouncing out of the jetcab a few days later. "The hospital better be spotless!" he called out jovially, paying off the hackie. "I'm in a mean mood. Liable to suspend everybody."

There was a strange lift to Dr. Kalmar's spirits as the old man entered the office. He wished without hope that he could inspire the same sort of reverence and respect. Impossible, of course. Dr. Lowell was great; he himself was nothing more than competent.

Dr. Kalmar introduced his young assistant to the old man.

"Young and strong," Dr. Lowell approved. "That's what we need on Deneb. Skill is important, but health and youth even more so."

"For those who stay," said Dr. Hoyt frostily. "I'm not."

Dr. Kalmar felt himself quiver with rage. The wet-nosed pup couldn't talk to Dr. Lowell like that!

But Dr. Lowell was saying cheerily, "You seem to have made up your mind to go back. No matter. Some decisions are like egg-shells—made only to be broken. I hope that's what you'll do with yours."

"Not a chance," Dr. Hoyt said. He didn't take the arrogant expression off his face even when Miss Dupont looked at him pleadingly.

"Then I say let's signal the next ship—" Dr. Kalmar began.

Dr. Lowell cut in quickly, "You two have patients to attend to, I see. Don't worry about me. I know my way around this poor little wretch of a building. Not much like Earth hospitals, is it?" He headed for the medical supply room, adding just before he went in, "A lot can be said for small installations. The personal touch, you know."

Dr. Kalmar enviously realized how deftly the old man had put the youngster in his place, whereas he would have stood there and slugged it out verbally. Lord, if he could only acquire that awesome wisdom!

"Well, back to work," he said, trying to imitate the cheeriness at least.

"Sure, let's ruin some more lives," Dr. Hoyt almost snarled.

"Leo, *please*!" whispered Miss Dupont imploringly.

Five minutes later the two doctors were furiously arguing over a very old man who had been sent by Social Control to have his eyesight strengthened.

"You have no right to let anybody dodder around like this!" Dr. Hoyt yelled. "What in hell is Rephysical for if not for such cases?"

"You probably think we ought to make him look like 25 again," Dr. Kalmar yelled back. "If that's all you've learned working here—"

"Now, now," said Dr. Lowell soothingly. He'd come in unnoticed by either of the men. "Dr. Hoyt is right, of course. We *would* like to make old people young and some day we'll be able to afford it. But not for some time to come."

"Why not?" Dr. Hoyt demanded in a lower tone, visibly flattered by Dr. Lowell's seemingly taking his side.

"Rephysical can't actually make anyone young. It can only give the outward appearance of youth and replace obviously diseased parts. But an old body is an old organism; it has to break down eventually. If we give it more vigor than it can endure, it breaks down too soon, much sooner than if we let it age normally. That represents economic loss as well as a humanitarian one."

"I don't follow you," Dr. Hoyt said bewilderedly.

"Well, our patient used to be a machinist. A good one. Now he's only able to be an oiler. A good one, too, when you improve his eyesight. He can go on doing that for years, performing a useful function. But he'd wear himself out in no time as a machinist again if you de-aged him."

"Is that supposed to make sense?"

"It does," said Dr. Lowell, "for Deneb."

Dr. Hoyt wanted to continue the discussion, but Dr. Lowell was already on his way to inspect another part of the hospital. Grumbling, the young man helped chart the optical nerves that had to be replaced and measure the new curve of the retinas ordered by Social Control.

But he fought just as strenuously over other cases, especially a retired freight-jet pilot who had to have his reflexes slowed down so he could become a contented meteorologist. Whenever there was a loud disagreement of this sort, Dr. Lowell was there to mediate calmly.

At the end of the day, Dr. Kalmar was emotionally exhausted. He said as he and Dr. Lowell were washing up, "The kid's hopeless. I thought you could straighten him out—God knows I couldn't—but he'll never see why we have to work the way we do."

"What do you suggest?" Dr. Lowell asked through a towel.

"Send him back to Earth. Get an intern who's more malleable."

Dr. Lowell tossed the towel into the sterilizer. "Can't be done. We're expanding so fast all over the Galaxy that Earth can't train and ship out enough doctors for the new colonies. If we sent him back, I don't know when we'd get another."

Dr. Kalmar swallowed. "You mean it's him or nobody?"

"Afraid so."

"But he'll never fit in on Deneb!"

"You did," Dr. Lowell said.

Dr. Kalmar tried to smile modestly. "I realized immediately how little I knew and how much more experience you had. I was willing to learn. Why, I used to listen to you and watch you work and try to see your reasons for doing things—"

"You think so?" asked Dr. Lowell.

Dr. Kalmar glanced at him in astonishment. "You know I did. I still do, for that matter."

"When you landed on Deneb," said Dr. Lowell, "you were the most stubborn, opinionated young ass I'd ever met."

Dr. Kalmar's smile became an appreciative grin. "Damn, I wish I had that light touch of yours!"

"You were so dogmatic and argumentative that Dr. Hoyt is a suggestible schoolboy in comparison."

"Well, you don't have to go that far," Dr. Kalmar said. "I get what you're driving at—every intern needs orientation and I should be more patient and understanding."

"Then you don't follow me at all," stated Dr. Lowell. "Invite Dr. Hoyt, Miss Dupont and me to your house for dinner tonight and maybe you'll get a better idea of what I mean."

"Anything for a free meal, eh?"

"And to keep a doctor here on Deneb that we'd lose otherwise."

"Implying that I can't do it."

"Isn't that the decision you'd come to?"

"Yes, I guess it is," Dr. Kalmar confessed. "All right, how about dinner at my house tonight? I'll round up the other two and call Harriet so she'll expect us."

"Delighted to come," said Dr. Lowell. "Nice of you to ask me."

Miss Dupont was elated at the invitation and Dr. Hoyt said he had nothing else to do anyway. On the videophone Mrs. Kalmar was dismayed for a moment, until Dr. Lowell told her to put through an emergency order to Central Commissary and he'd verify it.

That was when Dr. Kalmar realized how serious the old man was. On a raw planet where crises were everyday routine, a situation had to be catastrophic before it could be called an emergency.

Dinner on Deneb was the same as anywhere else in the Galaxy. To free women for other work, food was delivered weekly in cooked form. A special messenger from Central Commissary had brought the emergency rations and Mrs. Kalmar had simply punctured the self-heat cartridges and put the servings in front of each guest; the containers were disposable plates and came with single-use plastic utensils. No garbage, no preparation, no cleaning up afterward, except to toss them all into the converter furnace. Dr. Hoyt was still not accustomed to wholly grown foods; he'd been raised on synthetics, of course, which were the staples on Earth.

"Well, that was good," said Dr. Lowell, getting up from the table with his round little belly comfortably expanded. "Now, let's have a few drinks before we start a professional bull session. Where do you keep your liquor? I'd like to mix my special so Dr. Hoyt can see we colonials are not so provincial."

"Good Lord, I haven't had your special for years!" exclaimed Dr. Kalmar. "Since about the time I came to Deneb, in fact."

"That's why it's a special. Reserved for state occasions, such as arrivals of colleagues from our dear old home planet."

"Oh, you don't have to go to all that bother," said Dr. Hoyt. "You'd have to make it twice—once now and once when I leave."

"That won't be for quite a while, will it?" Miss Dupont asked anxiously.

"As soon as I finish my internship. No more alien worlds for me. I like Earth."

Mrs. Kalmar got him to talk about it, which was much easier than getting him to stop, while Dr. Kalmar showed the old man where the liquor stock and fixings were kept. Watching him mix the ingredients with a chemist's care, Dr. Kalmar felt a glow of nostalgia. He recalled the celebration at Dr. Lowell's house, several months after he had come from Earth, when he'd enjoyed himself so much that he'd passed out. It was one of the pleasanter memories of his start on Deneb.

"Can't mix them all in a single batch," Dr. Lowell explained, bringing the

drinks over one at a time as he finished preparing them. "Mrs. Kalmar ... Miss Dupont ... our gracious host, Dr. Kalmar ... and now Dr. Hoyt and myself." He lifted his glass at Dr. Hoyt. "Welcome to our latest associate—product, like ourselves, of the great medical schools of Earth. It's a forlorn hope, but may he learn as much from us about our peculiar methods as we learn from him about the latest terrestrial advances."

Dr. Hoyt, smiling as if he didn't think it possible, stood up when they'd downed their toast to him. "To Earth," he said. "May I get back in record time." He gulped it, said, "Delicious—for a colonial drink," and froze with his smile as fixed as if it had been painted on.

"Leo!" Miss Dupont cried, and shook him, but he stayed frozen.

"The man's allergic to alcohol!" said Dr. Kalmar, astonished.

"Do something!" Mrs. Kalmar begged. "Don't let him stand there like that! He—he looks like a petrified man!"

"Don't get panicky," said Dr. Lowell in a quiet, confident voice. "That's when you passed out, Dr. Kalmar. Right after your first taste of my special."

"But *we* haven't," Dr. Kalmar objected.

"Naturally. Your drinks weren't drugged."

"Drugged?" shrieked Miss Dupont. "You doped him?"

"That's rather obvious, isn't it?"

"But—what for?" Dr. Kalmar stammered.

"Same reason I slipped you a mickey not long after you got here. We can't take any chances that he'll ship back to Earth. You see?"

"I don't," raged Miss Dupont. "I think it's a cheap, dirty, foul trick and it won't work, either. You can't *keep* him drugged."

"I don't like you talking to Dr. Lowell like that," said Dr. Kalmar indignantly.

"You should be the last one to object," Mrs. Kalmar pointed out. "He said he drugged you, too."

"I know," Dr. Kalmar said blankly. "I don't understand—"

"You will," promised Dr. Lowell. "Just come along and don't interfere. Better give him the order; it'll keep things straighter."

Mrs. Kalmar was grimly disapproving and Miss Dupont was close to hysteria. Only Dr. Kalmar retained his awed respect for Dr. Lowell. If the old man said it was all right, it was, even if he couldn't see the reason.

"Go ahead," urged Dr. Lowell.

"Dr. Hoyt!"

"Yes, Dr. Kalmar?"

"You will come with us!"

"Yes, Dr. Kalmar."

Dr. Lowell took them back to the hospital.

"Now what?" asked Dr. Kalmar.

"You actually don't know?" Miss Dupont demanded. "He wants to put Leo through the Ego Alter."

"That's absurd," Dr. Kalmar said angrily, "and an outright slander. Dr. Lowell wouldn't consider such a thing—the boy didn't ask for it and it wasn't authorized by Social Control."

Dr. Lowell smiled genially and opened the door to the Ego Alter room. "I hate to disillusion you, Dr. Kalmar. That's exactly what I have in mind—the same thing I did to you."

"That's absurd," Dr. Kalmar repeated, but with less conviction and more confusion than before.

"It worked. Tell him to sit down."

Dr. Kalmar did, and automatically fitted the wired plastic helmet to Dr. Hoyt's head.

"You can't!" cried Miss Dupont as he reached for the dials on the control console. "It's not fair!"

"Let's not get involved in a discussion on ethics," Dr. Lowell said. "Deneb can't afford to lose him; we need every doctor we have. If he goes back to Earth it may be years before we get a replacement."

"But you can't do it without his consent!"

"There's time for that later," the old man grinned. "Keep his eyes on you, Dr. Kalmar, while you build up his father image. Cut down on hostility, aggression and power drive. Boost social responsibility and adventurousness. But make sure he's looking at you constantly."

"I won't allow it," said Mrs. Kalmar flatly. "You won't make my husband violate his oath."

"I did it to him, didn't I?" Dr. Lowell replied jovially. "It got you a husband."

Miss Dupont grabbed at Dr. Kalmar's hand, but he had already turned on the current.

"Anything else?" he asked.

"Well, he has to get married, of course," Dr. Lowell said. "Let him look at Miss Dupont—she's scheduled for this year, isn't she?—while you give him a shot of mating urge. Now, wipe out the memory of this incident and put him on a joy jag. We can validate that by liquoring him up afterward. When you're finished, bring him to."

Dr. Hoyt came out of it almost with a whoop. He lurched out of the insulated seat, stared at Miss Dupont for a moment with eyes that almost glittered, and seized

and kissed her.

"My goodness!" she gasped.

"Now, what were you saying about ethics?" Dr. Lowell asked.

There was no answer. Both Miss Dupont and Mrs. Kalmar had frozen.

"You drugged them, too?" Dr. Kalmar weakly wanted to know.

"A bit slower-acting," admitted the old man. "All you have to do with them is wipe out the last half hour. Don't want any witnesses to an unethical act, you know. Oh, and put them on a jag also."

Dr. Kalmar followed instructions.

Finished, they left the three uproariously drunk in the waiting room and went to wash up. Dr. Kalmar went along bewilderedly. The old man was as unconcerned as if he did this sort of thing daily.

"I was as arrogant and belligerent as this squirt was?"

"Worse," Dr. Lowell said. "He was willing to finish out his internship. You weren't. Still worried about the ethics?"

"Yes. Naturally."

"All right, apply some logic, then. Are you happier on Deneb than you'd have been on Earth?"

"Well, certainly. I'd have been lucky to get a job doctoring in a summer camp. I wouldn't trade a roomy planet like this for the jammed cubicles of Earth. And I like our methods better than terrestrial dogma. But those are my preferences. I can't inflict them on anybody else."

"The hell they were your preferences. You bickered more about our methods and longed more loudly for the tenements of Earth than this lad ever did. All it took was a slight Ego Alter and you have a happier life than you would have had. Right?"

Dr. Kalmar felt his tension ease. If the old man said it was right, it was. He became momentarily resentful when he realized that that reaction had been installed by Dr. Lowell, but then he smiled. It really was right. A bit arbitrary, perhaps, but for the good of Dr. Hoyt and Deneb in the long run, just as it had been for himself.

"Look," he said, drying his arms. "I've been wanting my wife to go through a slight rephysical."

"Why don't you ask her?"

"The fact is that I'm afraid she'll think I'm dissatisfied and I don't want her to get resentful."

"Maybe she'd like you to do some changing, too."

"What for? I'm all right."

"She probably feels the same way about herself."

"But all I want are a few changes in her. She's as high as a space pilot now. It would be a cinch to—"

Dr. Lowell flung down the towel and gave him an outraged glare. "There's such a thing as professional ethics, Dr. Kalmar!"

"But you—"

"That's different. It was a social decision, not a selfish one. If you ask her and she agrees, that's up to her. But you can't take advantage of her in an egocentric, arbitrary way. You just try it and I'll have you sent back to Earth."

Dr. Kalmar felt his knees grow weak in alarm. "No, no. It's not that important. Just an insignificant kind of wish."

And it was, he discovered when they went out to the waiting room. Unused to jags, Mrs. Kalmar was more affectionate than she'd been since they were first married; he'd have to remember to go on them periodically with her. Miss Dupont, unwilling to budge out of Dr. Hoyt's tight arms, had glassily joyous eyes. Dr. Hoyt didn't let her go until he caught sight of Dr. Kalmar.

"Greatest doctor I ever met," he said enthusiastically. "Won'ful planet, Deneb. Just wanna marry Miss Dupont, stay here and learn at your feet. Okay?"

Dr. Kalmar's glance at the old man was no less worshipful. "It couldn't be okayer," he said.

OMNILINGUAL

To translate writings, you need a key to the code—and if the last writer of Martian died forty thousand years before the first writer of Earth was born ... how could the Martian be translated...?

Martha Dane paused, looking up at the purple-tinged copper sky. The wind had shifted since noon, while she had been inside, and the dust storm that was sweeping the high deserts to the east was now blowing out over Syrtis. The sun, magnified by the haze, was a gorgeous magenta ball, as large as the sun of Terra, at which she could look directly. Tonight, some of that dust would come sifting down from the upper atmosphere to add another film to what had been burying the city for the last fifty thousand years.

The red loess lay over everything, covering the streets and the open spaces of park and plaza, hiding the small houses that had been crushed and pressed flat under it and the rubble that had come down from the tall buildings when roofs had caved in and walls had toppled outward. Here, where she stood, the ancient streets were a hundred to a hundred and fifty feet below the surface; the breach they had made in the wall of the building behind her had opened into the sixth story. She could look down on the cluster of prefabricated huts and sheds, on the brush-grown flat that had been the waterfront when this place had been a seaport on the ocean that was now Syrtis Depression; already, the bright metal was thinly coated with red dust. She thought, again, of what clearing this city would mean, in terms of time and labor, of people and supplies and equipment brought across fifty million miles of space. They'd have to use machinery; there was no other way it could be done. Bulldozers and power shovels and draglines; they were fast, but they were rough and indiscriminate. She remembered the digs around Harappa and Mohenjo-Daro, in the Indus Valley, and the careful, patient native laborers—the painstaking foremen, the pickmen and spademen, the long files of basketmen carrying away the earth. Slow and primitive as the civilization whose ruins they were uncovering, yes, but she could count on the fingers of one hand the times one of her pickmen had damaged a valuable object in the ground. If it hadn't

been for the underpaid and uncomplaining native laborer, archaeology would still be back where Wincklemann had found it. But on Mars there was no native labor; the last Martian had died five hundred centuries ago.

Something started banging like a machine gun, four or five hundred yards to her left. A solenoid jack-hammer; Tony Lattimer must have decided which building he wanted to break into next. She became conscious, then, of the awkward weight of her equipment, and began redistributing it, shifting the straps of her oxy-tank pack, slinging the camera from one shoulder and the board and drafting tools from the other, gathering the notebooks and sketchbooks under her left arm. She started walking down the road, over hillocks of buried rubble, around snags of wall jutting up out of the loess, past buildings still standing, some of them already breached and explored, and across the brush-grown flat to the huts.

There were ten people in the main office room of Hut One when she entered. As soon as she had disposed of her oxygen equipment, she lit a cigarette, her first since noon, then looked from one to another of them. Old Selim von Ohlmhorst, the Turco-German, one of her two fellow archaeologists, sitting at the end of the long table against the farther wall, smoking his big curved pipe and going through a looseleaf notebook. The girl ordnance officer, Sachiko Koremitsu, between two droplights at the other end of the table, her head bent over her work. Colonel Hubert Penrose, the Space Force CO, and Captain Field, the intelligence officer, listening to the report of one of the airdyne pilots, returned from his afternoon survey flight. A couple of girl lieutenants from Signals, going over the script of the evening telecast, to be transmitted to the *Cyrano*, on orbit five thousand miles off planet and relayed from thence to Terra via Lunar. Sid Chamberlain, the Trans-Space News Service man, was with them. Like Selim and herself, he was a civilian; he was advertising the fact with a white shirt and a sleeveless blue sweater. And Major Lindemann, the engineer officer, and one of his assistants, arguing over some plans on a drafting board. She hoped, drawing a pint of hot water to wash her hands and sponge off her face, that they were doing something about the pipeline.

She started to carry the notebooks and sketchbooks over to where Selim von Ohlmhorst was sitting, and then, as she always did, she turned aside and stopped to watch Sachiko. The Japanese girl was restoring what had been a book, fifty thousand years ago; her eyes were masked by a binocular loup, the black headband invisible against her glossy black hair, and she was picking delicately at the crumbled page with a hair-fine wire set in a handle of copper tubing. Finally, loosening a particle as tiny as a snowflake, she grasped it with tweezers, placed it on the sheet of transparent plastic on which she was reconstructing the page, and set it with a mist of fixative from a little spraygun. It was a sheer joy to watch her; every movement was as graceful and precise as though done to music after being rehearsed a hundred times.

"Hello, Martha. It isn't cocktail-time yet, is it?" The girl at the table spoke without raising her head, almost without moving her lips, as though she were afraid that the slightest breath would disturb the flaky stuff in front of her.

"No, it's only fifteen-thirty. I finished my work, over there. I didn't find any more books, if that's good news for you."

Sachiko took off the loup and leaned back in her chair, her palms cupped over her eyes.

"No, I like doing this. I call it micro-jigsaw puzzles. This book, here, really is a mess. Selim found it lying open, with some heavy stuff on top of it; the pages were simply crushed." She hesitated briefly. "If only it would mean something, after I did it."

There could be a faintly critical overtone to that. As she replied, Martha realized that she was being defensive.

"It will, some day. Look how long it took to read Egyptian hieroglyphics, even after they had the Rosetta Stone."

Sachiko smiled. "Yes. I know. But they did have the Rosetta Stone."

"And we don't. There is no Rosetta Stone, not anywhere on Mars. A whole race, a whole species, died while the first Cr√≤-Magnon cave-artist was daubing pictures of reindeer and bison, and across fifty thousand years and fifty million miles there was no bridge of understanding.

"We'll find one. There must be something, somewhere, that will give us the meaning of a few words, and we'll use them to pry meaning out of more words, and so on. We may not live to learn this language, but we'll make a start, and some day somebody will."

Sachiko took her hands from her eyes, being careful not to look toward the unshaded light, and smiled again. This time Martha was sure that it was not the Japanese smile of politeness, but the universally human smile of friendship.

"I hope so, Martha: really I do. It would be wonderful for you to be the first to do it, and it would be wonderful for all of us to be able to read what these people wrote. It would really bring this dead city to life again." The smile faded slowly. "But it seems so hopeless."

"You haven't found any more pictures?"

Sachiko shook her head. Not that it would have meant much if she had. They had found hundreds of pictures with captions; they had never been able to establish a positive relationship between any pictured object and any printed word. Neither of them said anything more, and after a moment Sachiko replaced the loup and bent her head forward over the book.

Selim von Ohlmhorst looked up from his notebook, taking his pipe out of his mouth.

"Everything finished, over there?" he asked, releasing a puff of smoke.

"Such as it was." She laid the notebooks and sketches on the table. "Captain Gicquel's started airsealing the building from the fifth floor down, with an entrance on the sixth; he'll start putting in oxygen generators as soon as that's done. I have everything cleared up where he'll be working."

Colonel Penrose looked up quickly, as though making a mental note to attend to something later. Then he returned his attention to the pilot, who was pointing something out on a map.

Von Ohlmhorst nodded. "There wasn't much to it, at that," he agreed. "Do you know which building Tony has decided to enter next?"

"The tall one with the conical thing like a candle extinguisher on top, I think. I heard him drilling for the blasting shots over that way."

"Well, I hope it turns out to be one that was occupied up to the end."

The last one hadn't. It had been stripped of its contents and fittings, a piece of this and a bit of that, haphazardly, apparently over a long period of time, until it had been almost gutted. For centuries, as it had died, this city had been consuming itself by a process of auto-cannibalism. She said something to that effect.

"Yes. We always find that—except, of course, at places like Pompeii. Have you seen any of the other Roman cities in Italy?" he asked. "Minturnae, for instance? First the inhabitants tore down this to repair that, and then, after they had vacated the city, other people came along and tore down what was left, and burned the stones for lime, or crushed them to mend roads, till there was nothing left but the foundation traces. That's where we are fortunate; this is one of the places where the Martian race perished, and there were no barbarians to come later and destroy what they had left." He puffed slowly at his pipe. "Some of these days, Martha, we are going to break into one of these buildings and find that it was one in which the last of these people died. Then we will learn the story of the end of this civilization."

And if we learn to read their language, we'll learn the whole story, not just the obituary. She hesitated, not putting the thought into words. "We'll find that, sometime, Selim," she said, then looked at her watch. "I'm going to get some more work done on my lists, before dinner."

For an instant, the old man's face stiffened in disapproval; he started to say something, thought better of it, and put his pipe back into his mouth. The brief wrinkling around his mouth and the twitch of his white mustache had been enough, however; she knew what he was thinking. She was wasting time and effort, he believed; time and effort belonging not to herself but to the expedition. He could be right, too, she realized. But he had to be wrong; there had to be a way to do it. She turned from him silently and went to her own packing-case seat, at the middle of the table.

Photographs, and photostats of restored pages of books, and transcripts of inscriptions, were piled in front of her, and the notebooks in which she was compiling her lists. She sat down, lighting a fresh cigarette, and reached over to a stack of unexamined material, taking off the top sheet. It was a photostat of what looked like the title page and contents of some sort of a periodical. She remembered it; she had found it herself, two days before, in a closet in the basement of the building she had just finished examining.

She sat for a moment, looking at it. It was readable, in the sense that she had set up a purely arbitrary but consistently pronounceable system of phonetic values for the letters. The long vertical symbols were vowels. There were only ten of them; not too many, allowing separate characters for long and short sounds. There were twenty of the short horizontal letters, which meant that sounds like -ng or -ch or -sh were single letters. The odds were millions to one against her system being anything like the original sound of the language, but she had listed several thousand Martian words, and she could pronounce all of them.

And that was as far as it went. She could pronounce between three and four thousand Martian words, and she couldn't assign a meaning to one of them. Selim von Ohlmhorst believed that she never would. So did Tony Lattimer, and he was a great deal less reticent about saying so. So, she was sure, did Sachiko Koremitsu. There were times, now and then, when she began to be afraid that they were right.

The letters on the page in front of her began squirming and dancing, slender vowels with fat little consonants. They did that, now, every night in her dreams. And there were other dreams, in which she read them as easily as English; waking, she would try desperately and vainly to remember. She blinked, and looked away from the photostatted page; when she looked back, the letters were behaving themselves again. There were three words at the top of the page, over-and-underlined, which seemed to be the Martian method of capitalization. Mastharnorvod Tadavas Sornhulva. She pronounced them mentally, leafing through her notebooks to see if she had encountered them before, and in what contexts. All three were listed. In addition, *masthar* was a fairly common word, and so was *norvod*, and so was *nor*, but *-vod* was a suffix and nothing but a suffix. *Davas*, was a word, too, and *ta-* was a common prefix; *sorn* and *hulva* were both common words. This language, she had long ago decided, must be something like German; when the Martians had needed a new word, they had just pasted a couple of existing words together. It would probably turn out to be a grammatical horror. Well, they had published magazines, and one of them had been called *Mastharnorvod Tadavas Sornhulva*. She wondered if it had been something like the *Quarterly Archaeological Review*, or something more on the order of *Sexy Stories*.

A smaller line, under the title, was plainly the issue number and date; enough

things had been found numbered in series to enable her to identify the numerals and determine that a decimal system of numeration had been used. This was the one thousand and seven hundred and fifty-fourth issue, for Doma, 14837; then Doma must be the name of one of the Martian months. The word had turned up several times before. She found herself puffing furiously on her cigarette as she leafed through notebooks and piles of already examined material.

Sachiko was speaking to somebody, and a chair scraped at the end of the table. She raised her head, to see a big man with red hair and a red face, in Space Force green, with the single star of a major on his shoulder, sitting down. Ivan Fitzgerald, the medic. He was lifting weights from a book similar to the one the girl ordnance officer was restoring.

"Haven't had time, lately," he was saying, in reply to Sachiko's question. "The Finchley girl's still down with whatever it is she has, and it's something I haven't been able to diagnose yet. And I've been checking on bacteria cultures, and in what spare time I have, I've been dissecting specimens for Bill Chandler. Bill's finally found a mammal. Looks like a lizard, and it's only four inches long, but it's a real warm-blooded, gamogenetic, placental, viviparous mammal. Burrows, and seems to live on what pass for insects here."

"Is there enough oxygen for anything like that?" Sachiko was asking.

"Seems to be, close to the ground." Fitzgerald got the headband of his loup adjusted, and pulled it down over his eyes. "He found this thing in a ravine down on the sea bottom—Ha, this page seems to be intact; now, if I can get it out all in one piece—"

He went on talking inaudibly to himself, lifting the page a little at a time and sliding one of the transparent plastic sheets under it, working with minute delicacy. Not the delicacy of the Japanese girl's small hands, moving like the paws of a cat washing her face, but like a steam-hammer cracking a peanut. Field archaeology requires a certain delicacy of touch, too, but Martha watched the pair of them with envious admiration. Then she turned back to her own work, finishing the table of contents.

The next page was the beginning of the first article listed; many of the words were unfamiliar. She had the impression that this must be some kind of scientific or technical journal; that could be because such publications made up the bulk of her own periodical reading. She doubted if it were fiction; the paragraphs had a solid, factual look.

At length, Ivan Fitzgerald gave a short, explosive grunt.

"Ha! Got it!"

She looked up. He had detached the page and was cementing another plastic sheet onto it.

"Any pictures?" she asked.

"None on this side. Wait a moment." He turned the sheet. "None on this side, either." He sprayed another sheet of plastic to sandwich the page, then picked up his pipe and relighted it.

"I get fun out of this, and it's good practice for my hands, so don't think I'm complaining," he said, "but, Martha, do you honestly think anybody's ever going to get anything out of this?"

Sachiko held up a scrap of the silicone plastic the Martians had used for paper with her tweezers. It was almost an inch square.

"Look; three whole words on this piece," she crowed. "Ivan, you took the easy book."

Fitzgerald wasn't being sidetracked. "This stuff's absolutely meaningless," he continued. "It had a meaning fifty thousand years ago, when it was written, but it has none at all now."

She shook her head. "Meaning isn't something that evaporates with time," she argued. "It has just as much meaning now as it ever had. We just haven't learned how to decipher it."

"That seems like a pretty pointless distinction," Selim von Ohlmhorst joined the conversation. "There no longer exists a means of deciphering it."

"We'll find one." She was speaking, she realized, more in self-encouragement than in controversy.

"How? From pictures and captions? We've found captioned pictures, and what have they given us? A caption is intended to explain the picture, not the picture to explain the caption. Suppose some alien to our culture found a picture of a man with a white beard and mustache sawing a billet from a log. He would think the caption meant, 'Man Sawing Wood.' How would he know that it was really 'Wilhelm II in Exile at Doorn?'"

Sachiko had taken off her loup and was lighting a cigarette.

"I can think of pictures intended to explain their captions," she said. "These picture language-books, the sort we use in the Service—little line drawings, with a word or phrase under them."

"Well, of course, if we found something like that," von Ohlmhorst began.

"Michael Ventris found something like that, back in the Fifties," Hubert Penrose's voice broke in from directly behind her.

She turned her head. The colonel was standing by the archaeologists' table; Captain Field and the airdyne pilot had gone out.

"He found a lot of Greek inventories of military stores," Penrose continued. "They were in Cretan Linear B script, and at the head of each list was a little picture, a sword or a helmet or a cooking tripod or a chariot wheel. That's what gave him the key to the script."

"Colonel's getting to be quite an archaeologist," Fitzgerald commented. "We're all learning each others' specialties, on this expedition."

"I heard about that long before this expedition was even contemplated." Penrose was tapping a cigarette on his gold case. "I heard about that back before the Thirty Days' War, at Intelligence School, when I was a lieutenant. As a feat of cryptanalysis, not an archaeological discovery."

"Yes, cryptanalysis," von Ohlmhorst pounced. "The reading of a known language in an unknown form of writing. Ventris' lists were in the known language, Greek. Neither he nor anybody else ever read a word of the Cretan language until the finding of the Greek-Cretan bilingual in 1963, because only with a bilingual text, one language already known, can an unknown ancient language be learned. And what hope, I ask you, have we of finding anything like that here? Martha, you've been working on these Martian texts ever since we landed here—for the last six months. Tell me, have you found a single word to which you can positively assign a meaning?"

"Yes, I think I have one." She was trying hard not to sound too exultant. "*Doma*. It's the name of one of the months of the Martian calendar."

"Where did you find that?" von Ohlmhorst asked. "And how did you establish—?"

"Here." She picked up the photostat and handed it along the table to him. "I'd call this the title page of a magazine."

He was silent for a moment, looking at it. "Yes. I would say so, too. Have you any of the rest of it?"

"I'm working on the first page of the first article, listed there. Wait till I see; yes, here's all I found, together, here." She told him where she had gotten it. "I just gathered it up, at the time, and gave it to Geoffrey and Rosita to photostat; this is the first I've really examined it."

The old man got to his feet, brushing tobacco ashes from the front of his jacket, and came to where she was sitting, laying the title page on the table and leafing quickly through the stack of photostats.

"Yes, and here is the second article, on page eight, and here's the next one." He finished the pile of photostats. "A couple of pages missing at the end of the last article. This is remarkable; surprising that a thing like a magazine would have survived so long."

"Well, this silicone stuff the Martians used for paper is pretty durable," Hubert Penrose said. "There doesn't seem to have been any water or any other fluid in it originally, so it wouldn't dry out with time."

"Oh, it's not remarkable that the material would have survived. We've found a good many books and papers in excellent condition. But only a really vital culture, an organized culture, will publish magazines, and this civilization had been

dying for hundreds of years before the end. It might have been a thousand years before the time they died out completely that such activities as publishing ended.''

''Well, look where I found it; in a closet in a cellar. Tossed in there and forgotten, and then ignored when they were stripping the building. Things like that happen.''

Penrose had picked up the title page and was looking at it.

''I don't think there's any doubt about this being a magazine, at all.'' He looked again at the title, his lips moving silently. ''*Mastharnorvod Tadavas Sornhulva*. Wonder what it means. But you're right about the date—*Doma* seems to be the name of a month. Yes, you have a word, Dr. Dane.''

Sid Chamberlain, seeing that something unusual was going on, had come over from the table at which he was working. After examining the title page and some of the inside pages, he began whispering into the stenophone he had taken from his belt.

''Don't try to blow this up to anything big, Sid,'' she cautioned. ''All we have is the name of a month, and Lord only knows how long it'll be till we even find out which month it was.''

''Well, it's a start, isn't it?'' Penrose argued. ''Grotefend only had the word for 'king' when he started reading Persian cuneiform.''

''But I don't have the word for month; just the name of a month. Everybody knew the names of the Persian kings, long before Grotefend.''

''That's not the story,'' Chamberlain said. ''What the public back on Terra will be interested in is finding out that the Martians published magazines, just like we do. Something familiar; make the Martians seem more real. More human.''

Three men had come in, and were removing their masks and helmets and oxy-tanks, and peeling out of their quilted coveralls. Two were Space Force lieutenants; the third was a youngish civilian with close-cropped blond hair, in a checked woolen shirt. Tony Lattimer and his helpers.

''Don't tell me Martha finally got something out of that stuff?'' he asked, approaching the table. He might have been commenting on the antics of the village half-wit, from his tone.

''Yes; the name of one of the Martian months.'' Hubert Penrose went on to explain, showing the photostat.

Tony Lattimer took it, glanced at it, and dropped it on the table.

''Sounds plausible, of course, but just an assumption. That word may not be the name of a month, at all—could mean 'published' or 'authorized' or 'copyrighted' or anything like that. Fact is, I don't think it's more than a wild guess that that thing's anything like a periodical.'' He dismissed the subject and turned to Penrose. ''I picked out the next building to enter; that tall one with the conical thing on top. It

ought to be in pretty good shape inside; the conical top wouldn't allow dust to accumulate, and from the outside nothing seems to be caved in or crushed. Ground level's higher than the other one, about the seventh floor. I found a good place and drilled for the shots; tomorrow I'll blast a hole in it, and if you can spare some people to help, we can start exploring it right away."

"Yes, of course, Dr. Lattimer. I can spare about a dozen, and I suppose you can find a few civilian volunteers," Penrose told him. "What will you need in the way of equipment?"

"Oh, about six demolition-packets; they can all be shot together. And the usual thing in the way of lights, and breaking and digging tools, and climbing equipment in case we run into broken or doubtful stairways. We'll divide into two parties. Nothing ought to be entered for the first time without a qualified archaeologist along. Three parties, if Martha can tear herself away from this catalogue of systematized incomprehensibilities she's making long enough to do some real work."

She felt her chest tighten and her face become stiff. She was pressing her lips together to lock in a furious retort when Hubert Penrose answered for her.

"Dr. Dane's been doing as much work, and as important work, as you have," he said brusquely. "More important work, I'd be inclined to say."

Von Ohlmhorst was visibly distressed; he glanced once toward Sid Chamberlain, then looked hastily away from him. Afraid of a story of dissension among archaeologists getting out.

"Working out a system of pronunciation by which the Martian language could be transliterated was a most important contribution," he said. "And Martha did that almost unassisted."

"Unassisted by Dr. Lattimer, anyway," Penrose added. "Captain Field and Lieutenant Koremitsu did some work, and I helped out a little, but nine-tenths of it she did herself."

"Purely arbitrary," Lattimer disdained. "Why, we don't even know that the Martians could make the same kind of vocal sounds we do."

"Oh, yes, we do," Ivan Fitzgerald contradicted, safe on his own ground. "I haven't seen any actual Martian skulls—these people seem to have been very tidy about disposing of their dead—but from statues and busts and pictures I've seen. I'd say that their vocal organs were identical with our own."

"Well, grant that. And grant that it's going to be impressive to rattle off the names of Martian notables whose statues we find, and that if we're ever able to attribute any placenames, they'll sound a lot better than this horse-doctors' Latin the old astronomers splashed all over the map of Mars," Lattimer said. "What I object to is her wasting time on this stuff, of which nobody will ever be able to read a word if she fiddles around with those lists till there's another hundred feet

of loess on this city, when there's so much real work to be done and we're as shorthanded as we are."

That was the first time that had come out in just so many words. She was glad Lattimer had said it and not Selim von Ohlmhorst.

"What you mean," she retorted, "is that it doesn't have the publicity value that digging up statues has."

For an instant, she could see that the shot had scored. Then Lattimer, with a side glance at Chamberlain, answered:

"What I mean is that you're trying to find something that any archaeologist, yourself included, should know doesn't exist. I don't object to your gambling your professional reputation and making a laughing stock of yourself; what I object to is that the blunders of one archaeologist discredit the whole subject in the eyes of the public."

That seemed to be what worried Lattimer most. She was framing a reply when the communication-outlet whistled shrilly, and then squawked: "Cocktail time! One hour to dinner; cocktails in the library, Hut Four!"

The library, which was also lounge, recreation room, and general gathering-place, was already crowded; most of the crowd was at the long table topped with sheets of glasslike plastic that had been wall panels out of one of the ruined buildings. She poured herself what passed, here, for a martini, and carried it over to where Selim von Ohlmhorst was sitting alone.

For a while, they talked about the building they had just finished exploring, then drifted into reminiscences of their work on Terra—von Ohlmhorst's in Asia Minor, with the Hittite Empire, and hers in Pakistan, excavating the cities of the Harappa Civilization. They finished their drinks—the ingredients were plentiful; alcohol and flavoring extracts synthesized from Martian vegetation—and von Ohlmhorst took the two glasses to the table for refills.

"You know, Martha," he said, when he returned, "Tony was right about one thing. You are gambling your professional standing and reputation. It's against all archaeological experience that a language so completely dead as this one could be deciphered. There was a continuity between all the other ancient languages—by knowing Greek, Champollion learned to read Egyptian; by knowing Egyptian, Hittite was learned. That's why you and your colleagues have never been able to translate the Harappa hieroglyphics; no such continuity exists there. If you insist that this utterly dead language can be read, your reputation will suffer for it."

"I heard Colonel Penrose say, once, that an officer who's afraid to risk his military reputation seldom makes much of a reputation. It's the same with us. If we really want to find things out, we have to risk making mistakes. And I'm a lot more interested in finding things out than I am in my reputation."

She glanced across the room, to where Tony Lattimer was sitting with Gloria Standish, talking earnestly, while Gloria sipped one of the counterfeit martinis and listened. Gloria was the leading contender for the title of Miss Mars, 1996, if you liked big bosomy blondes, but Tony would have been just as attentive to her if she'd looked like the Wicked Witch in "The Wizard of Oz." because Gloria was the Pan-Federation Telecast System commentator with the expedition.

"I know you are," the old Turco-German was saying. "That's why, when they asked me to name another archaeologist for this expedition, I named you."

He hadn't named Tony Lattimer; Lattimer had been pushed onto the expedition by his university. There'd been a lot of high-level string-pulling to that; she wished she knew the whole story. She'd managed to keep clear of universities and university politics; all her digs had been sponsored by non-academic foundations or art museums.

"You have an excellent standing: much better than my own, at your age. That's why it disturbs me to see you jeopardizing it by this insistence that the Martian language can be translated. I can't, really, see how you can hope to succeed."

She shrugged and drank some more of her cocktail, then lit another cigarette. It was getting tiresome to try to verbalize something she only felt.

"Neither do I, now, but I will. Maybe I'll find something like the picture-books Sachiko was talking about. A child's primer, maybe; surely they had things like that. And if I don't. I'll find something else. We've only been here six months. I can wait the rest of my life, if I have to, but I'll do it sometime."

"I can't wait so long," von Ohlmhorst said. "The rest of my life will only be a few years, and when the *Schiaparelli* orbits in, I'll be going back to Terra on the *Cyrano*."

"I wish you wouldn't. This is a whole new world of archaeology. Literally."

"Yes." He finished the cocktail and looked at his pipe as though wondering whether to re-light it so soon before dinner, then put it in his pocket. "A whole new world—but I've grown old, and it isn't for me. I've spent my life studying the Hittites. I can speak the Hittite language, though maybe King Muwatallis wouldn't be able to understand my modern Turkish accent. But the things I'd have to learn here—chemistry, physics, engineering, how to run analytic tests on steel girders and beryllo-silver alloys and plastics and silicones. I'm more at home with a civilization that rode in chariots and fought with swords and was just learning how to work iron. Mars is for young people. This expedition is a cadre of leadership—not only the Space Force people, who'll be the commanders of the main expedition, but us scientists, too. And I'm just an old cavalry general who can't learn to command tanks and aircraft. You'll have time to learn about Mars. I won't."

His reputation as the dean of Hittitologists was solid and secure, too, she added mentally. Then she felt ashamed of the thought. He wasn't to be classed with Tony

Lattimer.

"All I came for was to get the work started," he was continuing. "The Federation Government felt that an old hand should do that. Well, it's started, now; you and Tony and whoever come out on the *Schiaparelli* must carry it on. You said it, yourself; you have a whole new world. This is only one city, of the last Martian civilization. Behind this, you have the Late Upland Culture, and the Canal Builders, and all the civilizations and races and empires before them, clear back to the Martian Stone Age." He hesitated for a moment. "You have no idea what all you have to learn, Martha. This isn't the time to start specializing too narrowly."

They all got out of the truck and stretched their legs and looked up the road to the tall building with the queer conical cap askew on its top. The four little figures that had been busy against its wall climbed into the jeep and started back slowly, the smallest of them, Sachiko Koremitsu, paying out an electric cable behind. When it pulled up beside the truck, they climbed out; Sachiko attached the free end of the cable to a nuclear-electric battery. At once, dirty gray smoke and orange dust puffed out from the wall of the building, and, a second later, the multiple explosion banged.

She and Tony Lattimer and Major Lindemann climbed onto the truck, leaving the jeep stand by the road. When they reached the building, a satisfyingly wide breach had been blown in the wall. Lattimer had placed his shots between two of the windows; they were both blown out along with the wall between, and lay unbroken on the ground. Martha remembered the first building they had entered. A Space Force officer had picked up a stone and thrown it at one of the windows, thinking that would be all they'd need to do. It had bounced back. He had drawn his pistol—they'd all carried guns, then, on the principle that what they didn't know about Mars might easily hurt them—and fired four shots. The bullets had ricocheted, screaming thinly; there were four coppery smears of jacket-metal on the window, and a little surface spalling. Somebody tried a rifle; the 4000-f.s. bullet had cracked the glasslike pane without penetrating. An oxyacetylene torch had taken an hour to cut the window out; the lab crew, aboard the ship, were still trying to find out just what the stuff was.

Tony Lattimer had gone forward and was sweeping his flashlight back and forth, swearing petulantly, his voice harshened and amplified by his helmet-speaker.

"I thought I was blasting into a hallway; this lets us into a room. Careful; there's about a two-foot drop to the floor, and a lot of rubble from the blast just inside."

He stepped down through the breach; the others began dragging equipment out of the trucks—shovels and picks and crowbars and sledges, portable floodlights, cameras, sketching materials, an extension ladder, even Alpinists' ropes and crampons and pickaxes. Hubert Penrose was shouldering something

that looked like a surrealist machine gun but which was really a nuclear-electric jack-hammer. Martha selected one of the spike-shod mountaineer's ice axes, with which she could dig or chop or poke or pry or help herself over rough footing.

The windows, grimed and crusted with fifty millennia of dust, filtered in a dim twilight; even the breach in the wall, in the morning shade, lighted only a small patch of floor. Somebody snapped on a floodlight, aiming it at the ceiling. The big room was empty and bare; dust lay thick on the floor and reddened the once-white walls. It could have been a large office, but there was nothing left in it to indicate its use.

"This one's been stripped up to the seventh floor!" Lattimer exclaimed. "Street level'll be cleaned out, completely."

"Do for living quarters and shops, then," Lindemann said. "Added to the others, this'll take care of everybody on the *Schiaparelli*."

"Seem to have been a lot of electric or electronic apparatus over along this wall," one of the Space Force officers commented. "Ten or twelve electric outlets." He brushed the dusty wall with his glove, then scraped on the floor with his foot. "I can see where things were pried loose."

The door, one of the double sliding things the Martians had used, was closed. Selim von Ohlmhorst tried it, but it was stuck fast. The metal latch-parts had frozen together, molecule bonding itself to molecule, since the door had last been closed. Hubert Penrose came over with the jack-hammer, fitting a spear-point chisel into place. He set the chisel in the joint between the doors, braced the hammer against his hip, and squeezed the trigger-switch. The hammer banged briefly like the weapon it resembled, and the doors popped a few inches apart, then stuck. Enough dust had worked into the recesses into which it was supposed to slide to block it on both sides.

That was old stuff; they ran into that every time they had to force a door, and they were prepared for it. Somebody went outside and brought in a power-jack and finally one of the doors inched back to the door jamb. That was enough to get the lights and equipment through: they all passed from the room to the hallway beyond. About half the other doors were open; each had a number and a single word, *Darfhulva*, over it.

One of the civilian volunteers, a woman professor of natural ecology from Penn State University, was looking up and down the hall.

"You know," she said, "I feel at home here. I think this was a college of some sort, and these were classrooms. That word, up there; that was the subject taught, or the department. And those electronic devices, all where the class would face them; audio-visual teaching aids."

"A twenty-five-story university?" Lattimer scoffed. "Why, a building like this would handle thirty thousand students."

"Maybe there were that many. This was a big city, in its prime," Martha said, moved chiefly by a desire to oppose Lattimer.

"Yes, but think of the snafu in the halls, every time they changed classes. It'd take half an hour to get everybody back and forth from one floor to another." He turned to von Ohlmhorst. "I'm going up above this floor. This place has been looted clean up to here, but there's a chance there may be something above," he said.

"I'll stay on this floor, at present," the Turco-German replied. "There will be much coming and going, and dragging things in and out. We should get this completely examined and recorded first. Then Major Lindemann's people can do their worst, here."

"Well, if nobody else wants it, I'll take the downstairs," Martha said.

"I'll go along with you," Hubert Penrose told her. "If the lower floors have no archaeological value, we'll turn them into living quarters. I like this building: it'll give everybody room to keep out from under everybody else's feet." He looked down the hall. "We ought to find escalators at the middle."

The hallway, too, was thick underfoot with dust. Most of the open rooms were empty, but a few contained furniture, including small seat-desks. The original proponent of the university theory pointed these out as just what might be found in classrooms. There were escalators, up and down, on either side of the hall, and more on the intersecting passage to the right.

"That's how they handled the students, between classes," Martha commented. "And I'll bet there are more ahead, there."

They came to a stop where the hallway ended at a great square central hall. There were elevators, there, on two of the sides, and four escalators, still usable as stairways. But it was the walls, and the paintings on them, that brought them up short and staring.

They were clouded with dirt—she was trying to imagine what they must have looked like originally, and at the same time estimating the labor that would be involved in cleaning them—but they were still distinguishable, as was the word, *Darfhulva*, in golden letters above each of the four sides. It was a moment before she realized, from the murals, that she had at last found a meaningful Martian word. They were a vast historical panorama, clockwise around the room. A group of skin-clad savages squatting around a fire. Hunters with bows and spears, carrying a carcass of an animal slightly like a pig. Nomads riding long-legged, graceful mounts like hornless deer. Peasants sowing and reaping; mud-walled hut villages, and cities; processions of priests and warriors; battles with swords and bows, and with cannon and muskets; galleys, and ships with sails, and ships without visible means of propulsion, and aircraft. Changing costumes and weapons and machines and styles of architecture. A richly fertile landscape, gradually merging into barren deserts and bushlands—the time of the great planet-wide drought.

The Canal Builders—men with machines recognizable as steam-shovels and derricks, digging and quarrying and driving across the empty plains with aqueducts. More cities—seaports on the shrinking oceans; dwindling, half-deserted cities; an abandoned city, with four tiny humanoid figures and a thing like a combat-car in the middle of a brush-grown plaza, they and their vehicle dwarfed by the huge lifeless buildings around them. She had not the least doubt; *Darfhulva* was History.

"Wonderful!" von Ohlmhorst was saying. "The entire history of this race. Why, if the painter depicted appropriate costumes and weapons and machines for each period, and got the architecture right, we can break the history of this planet into eras and periods and civilizations."

"You can assume they're authentic. The faculty of this university would insist on authenticity in the *Darfhulva*—History—Department," she said.

"Yes! *Darfhulva*—History! And your magazine was a journal of *Sornhulva*!" Penrose exclaimed. "You have a word, Martha!" It took her an instant to realize that he had called her by her first name, and not Dr. Dane. She wasn't sure if that weren't a bigger triumph than learning a word of the Martian language. Or a more auspicious start. "Alone, I suppose that *hulva* means something like science or knowledge, or study; combined, it would be equivalent to our 'ology. And *darf* would mean something like past, or old times, or human events, or chronicles."

"That gives you three words, Martha!" Sachiko jubilated. "You did it."

"Let's don't go too fast," Lattimer said, for once not derisively. "I'll admit that *darfhulva* is the Martian word for history as a subject of study; I'll admit that *hulva* is the general word and *darf* modifies it and tells us which subject is meant. But as for assigning specific meanings, we can't do that because we don't know just how the Martians thought, scientifically or otherwise."

He stopped short, startled by the blue-white light that blazed as Sid Chamberlain's Kliegettes went on. When the whirring of the camera stopped, it was Chamberlain who was speaking:

"This is the biggest thing yet; the whole history of Mars, stone age to the end, all on four walls. I'm taking this with the fast shutter, but we'll telecast it in slow motion, from the beginning to the end. Tony, I want you to do the voice for it—running commentary, interpretation of each scene as it's shown. Would you do that?"

Would he do that! Martha thought. If he had a tail, he'd be wagging it at the very thought.

"Well, there ought to be more murals on the other floors," she said. "Who wants to come downstairs with us?"

Sachiko did; immediately. Ivan Fitzgerald volunteered. Sid decided to go upstairs with Tony Lattimer, and Gloria Standish decided to go upstairs, too. Most

of the party would remain on the seventh floor, to help Selim von Ohlmhorst get it finished. After poking tentatively at the escalator with the spike of her ice axe, Martha led the way downward.

The sixth floor was *Darfhulva*, too; military and technological history, from the character of the murals. They looked around the central hall, and went down to the fifth; it was like the floors above except that the big quadrangle was stacked with dusty furniture and boxes. Ivan Fitzgerald, who was carrying the floodlight, swung it slowly around. Here the murals were of heroic-sized Martians, so human in appearance as to seem members of her own race, each holding some object—a book, or a test tube, or some bit of scientific apparatus, and behind them were scenes of laboratories and factories, flame and smoke, lightning-flashes. The word at the top of each of the four walls was one with which she was already familiar—*Sornhulva*.

"Hey, Martha; there's that word," Ivan Fitzgerald exclaimed. "The one in the title of your magazine." He looked at the paintings. "Chemistry, or physics."

"Both." Hubert Penrose considered. "I don't think the Martians made any sharp distinction between them. See, the old fellow with the scraggly whiskers must be the inventor of the spectroscope; he has one in his hands, and he has a rainbow behind him. And the woman in the blue smock, beside him, worked in organic chemistry; see the diagrams of long-chain molecules behind her. What word would convey the idea of chemistry and physics taken as one subject?"

"*Sornhulva*," Sachiko suggested. "If *hulva's* something like science, "*sorn*" must mean matter, or substance, or physical object. You were right, all along, Martha. A civilization like this would certainly leave something like this, that would be self-explanatory."

"This'll wipe a little more of that superior grin off Tony Lattimer's face," Fitzgerald was saying, as they went down the motionless escalator to the floor below. "Tony wants to be a big shot. When you want to be a big shot, you can't bear the possibility of anybody else being a bigger big shot, and whoever makes a start on reading this language will be the biggest big shot archaeology ever saw."

That was true. She hadn't thought of it, in that way, before, and now she tried not to think about it. She didn't want to be a big shot. She wanted to be able to read the Martian language, and find things out about the Martians.

Two escalators down, they came out on a mezzanine around a wide central hall on the street level, the floor forty feet below them and the ceiling thirty feet above. Their lights picked out object after object below—a huge group of sculptured figures in the middle; some kind of a motor vehicle jacked up on trestles for repairs; things that looked like machine-guns and auto-cannon; long tables, tops littered with a dust-covered miscellany; machinery; boxes and crates and con-

tainers.

They made their way down and walked among the clutter, missing a hundred things for every one they saw, until they found an escalator to the basement. There were three basements, one under another, until at last they stood at the bottom of the last escalator, on a bare concrete floor, swinging the portable floodlight over stacks of boxes and barrels and drums, and heaps of powdery dust. The boxes were plastic—nobody had ever found anything made of wood in the city—and the barrels and drums were of metal or glass or some glasslike substance. They were outwardly intact. The powdery heaps might have been anything organic, or anything containing fluid. Down here, where wind and dust could not reach, evaporation had been the only force of destruction after the minute life that caused putrefaction had vanished.

They found refrigeration rooms, too, and using Martha's ice axe and the pistollike vibratool Sachiko carried on her belt, they pounded and pried one open, to find dessicated piles of what had been vegetables, and leathery chunks of meat. Samples of that stuff, rocketed up to the ship, would give a reliable estimate, by radio-carbon dating, of how long ago this building had been occupied. The refrigeration unit, radically different from anything their own culture had produced, had been electrically powered. Sachiko and Penrose, poking into it, found the switches still on; the machine had only ceased to function when the power-source, whatever that had been, had failed.

The middle basement had also been used, at least toward the end, for storage; it was cut in half by a partition pierced by but one door. They took half an hour to force this, and were on the point of sending above for heavy equipment when it yielded enough for them to squeeze through. Fitzgerald, in the lead with the light, stopped short, looked around, and then gave a groan that came through his helmet-speaker like a foghorn.

"Oh, no! ***No!***"

"What's the matter, Ivan?" Sachiko, entering behind him, asked anxiously.

He stepped aside. "Look at it, Sachi! Are we going to have to do all that?"

Martha crowded through behind her friend and looked around, then stood motionless, dizzy with excitement. Books. Case on case of books, half an acre of cases, fifteen feet to the ceiling. Fitzgerald, and Penrose, who had pushed in behind her, were talking in rapid excitement; she only heard the sound of their voices, not their words. This must be the main stacks of the university library—the entire literature of the vanished race of Mars. In the center, down an aisle between the cases, she could see the hollow square of the librarians' desk, and stairs and a dumb-waiter to the floor above.

She realized that she was walking forward, with the others, toward this. Sachiko was saying: "I'm the lightest; let me go first." She must be talking about

the spidery metal stairs.

"I'd say they were safe," Penrose answered. "The trouble we've had with doors around here shows that the metal hasn't deteriorated."

In the end, the Japanese girl led the way, more catlike than ever in her caution. The stairs were quite sound, in spite of their fragile appearance, and they all followed her. The floor above was a duplicate of the room they had entered, and seemed to contain about as many books. Rather than waste time forcing the door here, they returned to the middle basement and came up by the escalator down which they had originally descended.

The upper basement contained kitchens—electric stoves, some with pots and pans still on them—and a big room that must have been, originally, the students' dining room, though when last used it had been a workshop. As they expected, the library reading room was on the street-level floor, directly above the stacks. It seemed to have been converted into a sort of common living room for the building's last occupants. An adjoining auditorium had been made into a chemical works; there were vats and distillation apparatus, and a metal fractionating tower that extended through a hole knocked in the ceiling seventy feet above. A good deal of plastic furniture of the sort they had been finding everywhere in the city was stacked about, some of it broken up, apparently for reprocessing. The other rooms on the street floor seemed also to have been devoted to manufacturing and repair work; a considerable industry, along a number of lines, must have been carried on here for a long time after the university had ceased to function as such.

On the second floor, they found a museum; many of the exhibits remained, tantalizingly half-visible in grimed glass cases. There had been administrative offices there, too. The doors of most of them were closed, and they did not waste time trying to force them, but those that were open had been turned into living quarters. They made notes, and rough floor plans, to guide them in future more thorough examination; it was almost noon before they had worked their way back to the seventh floor.

Selim von Ohlmhorst was in a room on the north side of the building, sketching the position of things before examining them and collecting them for removal. He had the floor checkerboarded with a grid of chalked lines, each numbered.

"We have everything on this floor photographed," he said. "I have three gangs—all the floodlights I have—sketching and making measurements. At the rate we're going, with time out for lunch, we'll be finished by the middle of the afternoon."

"You've been working fast. Evidently you aren't being high-church about a 'qualified archaeologist' entering rooms first," Penrose commented.

"Ach, childishness!" the old man exclaimed impatiently. "These officers of yours aren't fools. All of them have been to Intelligence School and Criminal In-

vestigation School. Some of the most careful amateur archaeologists I ever knew were retired soldiers or policemen. But there isn't much work to be done. Most of the rooms are either empty or like this one—a few bits of furniture and broken trash and scraps of paper. Did you find anything down on the lower floors?"

"Well, yes," Penrose said, a hint of mirth in his voice. "What would you say, Martha?"

She started to tell Selim. The others, unable to restrain their excitement, broke in with interruptions. Von Ohlmhorst was staring in incredulous amazement.

"But this floor was looted almost clean, and the buildings we've entered before were all looted from the street level up," he said, at length.

"The people who looted this one lived here," Penrose replied. "They had electric power to the last; we found refrigerators full of food, and stoves with the dinner still on them. They must have used the elevators to haul things down from the upper floor. The whole first floor was converted into workshops and laboratories. I think that this place must have been something like a monastery in the Dark Ages in Europe, or what such a monastery would have been like if the Dark Ages had followed the fall of a highly developed scientific civilization. For one thing, we found a lot of machine guns and light auto-cannon on the street level, and all the doors were barricaded. The people here were trying to keep a civilization running after the rest of the planet had gone back to barbarism; I suppose they'd have to fight off raids by the barbarians now and then."

"You're not going to insist on making this building into expedition quarters, I hope, colonel?" von Ohlmhorst asked anxiously.

"Oh, no! This place is an archaeological treasure-house. More than that; from what I saw, our technicians can learn a lot, here. But you'd better get this floor cleaned up as soon as you can, though. I'll have the subsurface part, from the sixth floor down, airsealed. Then we'll put in oxygen generators and power units, and get a couple of elevators into service. For the floors above, we can use temporary airsealing floor by floor, and portable equipment; when we have things atmosphered and lighted and heated, you and Martha and Tony Lattimer can go to work systematically and in comfort, and I'll give you all the help I can spare from the other work. This is one of the biggest things we've found yet."

Tony Lattimer and his companions came down to the seventh floor a little later.

"I don't get this, at all," he began, as soon as he joined them. "This building wasn't stripped the way the others were. Always, the procedure seems to have been to strip from the bottom up, but they seem to have stripped the top floors first, here. All but the very top. I found out what that conical thing is, by the way. It's a wind-rotor, and under it there's an electric generator. This building generated its own power."

"What sort of condition are the generators in?" Penrose asked.

"Well, everything's full of dust that blew in under the rotor, of course, but it looks to be in pretty good shape. Hey, I'll bet that's it! They had power, so they used the elevators to haul stuff down. That's just what they did. Some of the floors above here don't seem to have been touched, though." He paused momentarily; back of his oxy-mask, he seemed to be grinning. "I don't know that I ought to mention this in front of Martha, but two floors above—we hit a room—it must have been the reference library for one of the departments—that had close to five hundred books in it."

The noise that interrupted him, like the squawking of a Brobdingnagian parrot, was only Ivan Fitzgerald laughing through his helmet-speaker.

Lunch at the huts was a hasty meal, with a gabble of full-mouthed and excited talking. Hubert Penrose and his chief subordinates snatched their food in a huddled consultation at one end of the table; in the afternoon, work was suspended on everything else and the fifty-odd men and women of the expedition concentrated their efforts on the University. By the middle of the afternoon, the seventh floor had been completely examined, photographed and sketched, and the murals in the square central hall covered with protective tarpaulins, and Laurent Gicquel and his airsealing crew had moved in and were at work. It had been decided to seal the central hall at the entrances. It took the French-Canadian engineer most of the afternoon to find all the ventilation-ducts and plug them. An elevator-shaft on the north side was found reaching clear to the twenty-fifth floor; this would give access to the top of the building; another shaft, from the center, would take care of the floors below. Nobody seemed willing to trust the ancient elevators, themselves; it was the next evening before a couple of cars and the necessary machinery could be fabricated in the machine shops aboard the ship and sent down by landing-rocket. By that time, the airsealing was finished, the nuclear-electric energy-converters were in place, and the oxygen generators set up.

Martha was in the lower basement, an hour or so before lunch the day after, when a couple of Space Force officers came out of the elevator, bringing extra lights with them. She was still using oxygen-equipment; it was a moment before she realized that the newcomers had no masks, and that one of them was smoking. She took off her own helmet-speaker, throat-mike and mask and unslung her tank-pack, breathing cautiously. The air was chilly, and musty-acrid with the odor of antiquity—the first Martian odor she had smelled—but when she lit a cigarette, the lighter flamed clear and steady and the tobacco caught and burned evenly.

The archaeologists, many of the other civilian scientists, a few of the Space Force officers and the two news-correspondents, Sid Chamberlain and Gloria Standish, moved in that evening, setting up cots in vacant rooms. They installed electric stoves and a refrigerator in the old Library Reading Room, and put in a

bar and lunch counter. For a few days, the place was full of noise and activity, then, gradually, the Space Force people and all but a few of the civilians returned to their own work. There was still the business of airsealing the more habitable of the buildings already explored, and fitting them up in readiness for the arrival, in a year and a half, of the five hundred members of the main expedition. There was work to be done enlarging the landing field for the ship's rocket craft, and building new chemical-fuel tanks.

There was the work of getting the city's ancient reservoirs cleared of silt before the next spring thaw brought more water down the underground aqueducts everybody called canals in mistranslation of Schiaparelli's Italian word, though this was proving considerably easier than anticipated. The ancient Canal-Builders must have anticipated a time when their descendants would no longer be capable of maintenance work, and had prepared against it. By the day after the University had been made completely habitable, the actual work there was being done by Selim, Tony Lattimer and herself, with half a dozen Space Force officers, mostly girls, and four or five civilians, helping.

They worked up from the bottom, dividing the floor-surfaces into numbered squares, measuring and listing and sketching and photographing. They packaged samples of organic matter and sent them up to the ship for Carbon-14 dating and analysis; they opened cans and jars and bottles, and found that everything fluid in them had evaporated, through the porosity of glass and metal and plastic if there were no other way. Wherever they looked, they found evidence of activity suddenly suspended and never resumed. A vise with a bar of metal in it, half cut through and the hacksaw beside it. Pots and pans with hardened remains of food in them; a leathery cut of meat on a table, with the knife ready at hand. Toilet articles on washstands; unmade beds, the bedding ready to crumble at a touch but still retaining the impress of the sleeper's body; papers and writing materials on desks, as though the writer had gotten up, meaning to return and finish in a fifty-thousand-year-ago moment.

It worried her. Irrationally, she began to feel that the Martians had never left this place; that they were still around her, watching disapprovingly every time she picked up something they had laid down. They haunted her dreams, now, instead of their enigmatic writing. At first, everybody who had moved into the University had taken a separate room, happy to escape the crowding and lack of privacy of the huts. After a few nights, she was glad when Gloria Standish moved in with her, and accepted the newswoman's excuse that she felt lonely without somebody to talk to before falling asleep. Sachiko Koremitsu joined them the next evening, and before going to bed, the girl officer cleaned and oiled her pistol, remarking that she was afraid some rust may have gotten into it.

The others felt it, too. Selim von Ohlmhorst developed the habit of turning

quickly and looking behind him, as though trying to surprise somebody or something that was stalking him. Tony Lattimer, having a drink at the bar that had been improvised from the librarian's desk in the Reading Room, set down his glass and swore.

"You know what this place is? It's an archaeological *Marie Celeste!*" he declared. "It was occupied right up to the end—we've all seen the shifts these people used to keep a civilization going here—but what was the end? What happened to them? Where did they go?"

"You didn't expect them to be waiting out front, with a red carpet and a big banner, *Welcome Terrans*, did you, Tony?" Gloria Standish asked.

"No, of course not; they've all been dead for fifty thousand years. But if they were the last of the Martians, why haven't we found their bones, at least? Who buried them, after they were dead?" He looked at the glass, a bubble-thin goblet, found, with hundreds of others like it, in a closet above, as though debating with himself whether to have another drink. Then he voted in the affirmative and reached for the cocktail pitcher. "And every door on the old ground level is either barred or barricaded from the inside. How did they get out? And why did they leave?"

The next day, at lunch, Sachiko Koremitsu had the answer to the second question. Four or five electrical engineers had come down by rocket from the ship, and she had been spending the morning with them, in oxy-masks, at the top of the building.

"Tony, I thought you said those generators were in good shape," she began, catching sight of Lattimer. "They aren't. They're in the most unholy mess I ever saw. What happened, up there, was that the supports of the wind-rotor gave way, and weight snapped the main shaft, and smashed everything under it."

"Well, after fifty thousand years, you can expect something like that," Lattimer retorted. "When an archaeologist says something's in good shape, he doesn't necessarily mean it'll start as soon as you shove a switch in."

"You didn't notice that it happened when the power was on, did you," one of the engineers asked, nettled at Lattimer's tone. "Well, it was. Everything's burned out or shorted or fused together; I saw one busbar eight inches across melted clean in two. It's a pity we didn't find things in good shape, even archaeologically speaking. I saw a lot of interesting things, things in advance of what we're using now. But it'll take a couple of years to get everything sorted out and figure what it looked like originally."

"Did it look as though anybody'd made any attempt to fix it?" Martha asked.

Sachiko shook her head. "They must have taken one look at it and given up. I don't believe there would have been any possible way to repair anything."

"Well, that explains why they left. They needed electricity for lighting, and

heating, and all their industrial equipment was electrical. They had a good life, here, with power; without it, this place wouldn't have been habitable."

"Then why did they barricade everything from the inside, and how did they get out?" Lattimer wanted to know.

"To keep other people from breaking in and looting. Last man out probably barred the last door and slid down a rope from upstairs," von Ohlmhorst suggested. "This Houdini-trick doesn't worry me too much. We'll find out eventually."

"Yes, about the time Martha starts reading Martian," Lattimer scoffed.

"That may be just when we'll find out," von Ohlmhorst replied seriously. "It wouldn't surprise me if they left something in writing when they evacuated this place."

"Are you really beginning to treat this pipe dream of hers as a serious possibility, Selim?" Lattimer demanded. "I know, it would be a wonderful thing, but wonderful things don't happen just because they're wonderful. Only because they're possible, and this isn't. Let me quote that distinguished Hittitologist, Johannes Friedrich: 'Nothing can be translated out of nothing.' Or that later but not less distinguished Hittitologist, Selim von Ohlmhorst: 'Where are you going to get your bilingual?'"

"Friedrich lived to see the Hittite language deciphered and read," von Ohlmhorst reminded him.

"Yes, when they found Hittite-Assyrian bilinguals." Lattimer measured a spoonful of coffee-powder into his cup and added hot water. "Martha, you ought to know, better than anybody, how little chance you have. You've been working for years in the Indus Valley; how many words of Harappa have you or anybody else ever been able to read?"

"We never found a university, with a half-million-volume library, at Harappa or Mohenjo-Daro."

"And, the first day we entered this building, we established meanings for several words," Selim von Ohlmhorst added.

"And you've never found another meaningful word since," Lattimer added. "And you're only sure of general meaning, not specific meaning of word-elements, and you have a dozen different interpretations for each word."

"We made a start," von Ohlmhorst maintained. "We have Grotefend's word for 'king.' But I'm going to be able to read some of those books, over there, if it takes me the rest of my life here. It probably will, anyhow."

"You mean you've changed your mind about going home on the *Cyrano*?" Martha asked. "You'll stay on here?"

The old man nodded. "I can't leave this. There's too much to discover. The

old dog will have to learn a lot of new tricks, but this is where my work will be, from now on."

Lattimer was shocked. "You're nuts!" he cried. "You mean you're going to throw away everything you've accomplished in Hittitology and start all over again here on Mars? Martha, if you've talked him into this crazy decision, you're a criminal!"

"Nobody talked me into anything," von Ohlmhorst said roughly. "And as for throwing away what I've accomplished in Hittitology, I don't know what the devil you're talking about. Everything I know about the Hittite Empire is published and available to anybody. Hittitology's like Egyptology; it's stopped being research and archaeology and become scholarship and history. And I'm not a scholar or a historian; I'm a pick-and-shovel field archaeologist—a highly skilled and specialized grave-robber and junk-picker—and there's more pick-and-shovel work on this planet than I could do in a hundred lifetimes. This is something new; I was a fool to think I could turn my back on it and go back to scribbling footnotes about Hittite kings."

"You could have anything you wanted, in Hittitology. There are a dozen universities that'd sooner have you than a winning football team. But no! You have to be the top man in Martiology, too. You can't leave that for anybody else—" Lattimer shoved his chair back and got to his feet, leaving the table with an oath that was almost a sob of exasperation.

Maybe his feelings were too much for him. Maybe he realized, as Martha did, what he had betrayed. She sat, avoiding the eyes of the others, looking at the ceiling, as embarrassed as though Lattimer had flung something dirty on the table in front of them. Tony Lattimer had, desperately, wanted Selim to go home on the *Cyrano*. Martiology was a new field; if Selim entered it, he would bring with him the reputation he had already built in Hittitology, automatically stepping into the leading role that Lattimer had coveted for himself. Ivan Fitzgerald's words echoed back to her—when you want to be a big shot, you can't bear the possibility of anybody else being a bigger big shot. His derision of her own efforts became comprehensible, too. It wasn't that he was convinced that she would never learn to read the Martian language. He had been afraid that she would.

Ivan Fitzgerald finally isolated the germ that had caused the Finchley girl's undiagnosed illness. Shortly afterward, the malady turned into a mild fever, from which she recovered. Nobody else seemed to have caught it. Fitzgerald was still trying to find out how the germ had been transmitted.

They found a globe of Mars, made when the city had been a seaport. They located the city, and learned that its name had been Kukan—or something with a similar vowel-consonant ratio. Immediately, Sid Chamberlain and Gloria Standish began giving their telecasts a Kukan dateline, and Hubert Penrose used the name

in his official reports. They also found a Martian calendar; the year had been divided into ten more or less equal months, and one of them had been Doma. Another month was Nor, and that was a part of the name of the scientific journal Martha had found.

Bill Chandler, the zoologist, had been going deeper and deeper into the old sea bottom of Syrtis. Four hundred miles from Kukan, and at fifteen thousand feet lower altitude, he shot a bird. At least, it was a something with wings and what were almost but not quite feathers, though it was more reptilian than avian in general characteristics. He and Ivan Fitzgerald skinned and mounted it, and then dissected the carcass almost tissue by tissue. About seven-eighths of its body capacity was lungs; it certainly breathed air containing at least half enough oxygen to support human life, or five times as much as the air around Kukan.

That took the center of interest away from archaeology, and started a new burst of activity. All the expedition's aircraft—four jetticopters and three wingless airdyne reconnaissance fighters—were thrown into intensified exploration of the lower sea bottoms, and the bio-science boys and girls were wild with excitement and making new discoveries on each flight.

The University was left to Selim and Martha and Tony Lattimer, the latter keeping to himself while she and the old Turco-German worked together. The civilian specialists in other fields, and the Space Force people who had been holding tape lines and making sketches and snapping cameras, were all flying to lower Syrtis to find out how much oxygen there was and what kind of life it supported.

Sometimes Sachiko dropped in; most of the time she was busy helping Ivan Fitzgerald dissect specimens. They had four or five species of what might loosely be called birds, and something that could easily be classed as a reptile, and a carnivorous mammal the size of a cat with birdlike claws, and a herbivore almost identical with the piglike thing in the big *Darfhulva* mural, and another like a gazelle with a single horn in the middle of its forehead.

The high point came when one party, at thirty thousand feet below the level of Kukan, found breathable air. One of them had a mild attack of *sorroche* and had to be flown back for treatment in a hurry, but the others showed no ill effects.

The daily newscasts from Terra showed a corresponding shift in interest at home. The discovery of the University had focused attention on the dead past of Mars; now the public was interested in Mars as a possible home for humanity. It was Tony Lattimer who brought archaeology back into the activities of the expedition and the news at home.

Martha and Selim were working in the museum on the second floor, scrubbing the grime from the glass cases, noting contents, and grease-penciling numbers; Lattimer and a couple of Space Force officers were going through what had been the administrative offices on the other side. It was one of these, a young

second lieutenant, who came hurrying in from the mezzanine, almost bursting with excitement.

"Hey, Martha! Dr. von Ohlmhorst!" he was shouting. "Where are you? Tony's found the Martians!"

Selim dropped his rag back in the bucket; she laid her clipboard on top of the case beside her.

"Where?" they asked together.

"Over on the north side." The lieutenant took hold of himself and spoke more deliberately. "Little room, back of one of the old faculty offices—conference room. It was locked from the inside, and we had to burn it down with a torch. That's where they are. Eighteen of them, around a long table—"

Gloria Standish, who had dropped in for lunch, was on the mezzanine, fairly screaming into a radiophone extension:

" ... Dozen and a half of them! Well, of course they're dead. What a question! They look like skeletons covered with leather. No, I do not know what they died of. Well, forget it; I don't care if Bill Chandler's found a three-headed hippopotamus. Sid, don't you get it? We've found the *Martians!*"

She slammed the phone back on its hook, rushing away ahead of them.

Martha remembered the closed door; on the first survey, they hadn't attempted opening it. Now it was burned away at both sides and lay, still hot along the edges, on the floor of the big office room in front. A floodlight was on in the room inside, and Lattimer was going around looking at things while a Space Force officer stood by the door. The center of the room was filled by a long table; in armchairs around it sat the eighteen men and women who had occupied the room for the last fifty millennia. There were bottles and glasses on the table in front of them, and, had she seen them in a dimmer light, she would have thought that they were merely dozing over their drinks. One had a knee hooked over his chair-arm and was curled in foetuslike sleep. Another had fallen forward onto the table, arms extended, the emerald set of a ring twinkling dully on one finger. Skeletons covered with leather, Gloria Standish had called them, and so they were—faces like skulls, arms and legs like sticks, the flesh shrunken onto the bones under it.

"Isn't this something!" Lattimer was exulting. "Mass suicide, that's what it was. Notice what's in the corners?"

Braziers, made of perforated two-gallon-odd metal cans, the white walls smudged with smoke above them. Von Ohlmhorst had noticed them at once, and was poking into one of them with his flashlight.

"Yes; charcoal. I noticed a quantity of it around a couple of hand-forges in the shop on the first floor. That's why you had so much trouble breaking in; they'd sealed the room on the inside." He straightened and went around the room, until he found a ventilator, and peered into it. "Stuffed with rags. They must have been

all that were left, here. Their power was gone, and they were old and tired, and all around them their world was dying. So they just came in here and lit the charcoal, and sat drinking together till they all fell asleep. Well, we know what became of them, now, anyhow."

Sid and Gloria made the most of it. The Terran public wanted to hear about Martians, and if live Martians couldn't be found, a room full of dead ones was the next best thing. Maybe an even better thing; it had been only sixty-odd years since the Orson Welles invasion-scare. Tony Lattimer, the discoverer, was beginning to cash in on his attentions to Gloria and his ingratiation with Sid; he was always either making voice-and-image talks for telecast or listening to the news from the home planet. Without question, he had become, overnight, the most widely known archaeologist in history.

"Not that I'm interested in all this, for myself," he disclaimed, after listening to the telecast from Terra two days after his discovery. "But this is going to be a big thing for Martian archaeology. Bring it to the public attention; dramatize it. Selim, can you remember when Lord Carnarvon and Howard Carter found the tomb of Tutankhamen?"

"In 1923? I was two years old, then," von Ohlmhorst chuckled. "I really don't know how much that publicity ever did for Egyptology. Oh, the museums did devote more space to Egyptian exhibits, and after a museum department head gets a few extra showcases, you know how hard it is to make him give them up. And, for a while, it was easier to get financial support for new excavations. But I don't know how much good all this public excitement really does, in the long run."

"Well, I think one of us should go back on the *Cyrano*, when the *Schiaparelli* orbits in," Lattimer said. "I'd hoped it would be you; your voice would carry the most weight. But I think it's important that one of us go back, to present the story of our work, and what we have accomplished and what we hope to accomplish, to the public and to the universities and the learned societies, and to the Federation Government. There will be a great deal of work that will have to be done. We must not allow the other scientific fields and the so-called practical interests to monopolize public and academic support. So, I believe I shall go back at least for a while, and see what I can do—"

Lectures. The organization of a Society of Martian Archaeology, with Anthony Lattimer, Ph.D., the logical candidate for the chair. Degrees, honors; the deference of the learned, and the adulation of the lay public. Positions, with impressive titles and salaries. Sweet are the uses of publicity.

She crushed out her cigarette and got to her feet. "Well, I still have the final lists of what we found in *Halvhulva*—Biology—department to check over. I'm starting on Sornhulva tomorrow, and I want that stuff in shape for expert evaluation."

That was the sort of thing Tony Lattimer wanted to get away from, the detail-

work and the drudgery. Let the infantry do the slogging through the mud; the brass-hats got the medals.

She was halfway through the fifth floor, a week later, and was having midday lunch in the reading room on the first floor when Hubert Penrose came over and sat down beside her, asking her what she was doing. She told him.

"I wonder if you could find me a couple of men, for an hour or so," she added. "I'm stopped by a couple of jammed doors at the central hall. Lecture room and library, if the layout of that floor's anything like the ones below it."

"Yes. I'm a pretty fair door-buster, myself." He looked around the room. "There's Jeff Miles; he isn't doing much of anything. And we'll put Sid Chamberlain to work, for a change, too. The four of us ought to get your doors open." He called to Chamberlain, who was carrying his tray over to the dish washer. "Oh, Sid; you doing anything for the next hour or so?"

"I was going up to the fourth floor, to see what Tony's doing."

"Forget it. Tony's bagged his season limit of Martians. I'm going to help Martha bust in a couple of doors; we'll probably find a whole cemetery full of Martians."

Chamberlain shrugged. "Why not. A jammed door can have anything back of it, and I know what Tony's doing—just routine stuff."

Jeff Miles, the Space Force captain, came over, accompanied by one of the lab-crew from the ship who had come down on the rocket the day before.

"This ought to be up your alley, Mort," he was saying to his companion. "Chemistry and physics department. Want to come along?"

The lab man, Mort Tranter, was willing. Seeing the sights was what he'd come down from the ship for. She finished her coffee and cigarette, and they went out into the hall together, gathered equipment and rode the elevator to the fifth floor.

The lecture hall door was the nearest; they attacked it first. With proper equipment and help, it was no problem and in ten minutes they had it open wide enough to squeeze through with the floodlights. The room inside was quite empty, and, like most of the rooms behind closed doors, comparatively free from dust. The students, it appeared, had sat with their backs to the door, facing a low platform, but their seats and the lecturer's table and equipment had been removed. The two side walls bore inscriptions: on the right, a pattern of concentric circles which she recognized as a diagram of atomic structure, and on the left a complicated table of numbers and words, in two columns. Tranter was pointing at the diagram on the right.

"They got as far as the Bohr atom, anyhow," he said. "Well, not quite. They knew about electron shells, but they have the nucleus pictured as a solid mass. No indication of proton-and-neutron structure. I'll bet, when you come to translate their scientific books, you'll find that they taught that the atom was the ultimate and indivisible particle. That explains why you people never found any evidence

that the Martians used nuclear energy.''

''That's a uranium atom,'' Captain Miles mentioned.

''It is?'' Sid Chamberlain asked, excitedly. ''Then they did know about atomic energy. Just because we haven't found any pictures of A-bomb mushrooms doesn't mean—''

She turned to look at the other wall. Sid's signal reactions were setting away from him again; uranium meant nuclear power to him, and the two words were interchangeable. As she studied the arrangement of the numbers and words, she could hear Tranter saying:

''Nuts, Sid. We knew about uranium a long time before anybody found out what could be done with it. Uranium was discovered on Terra in 1789, by Klaproth.''

There was something familiar about the table on the left wall. She tried to remember what she had been taught in school about physics, and what she had picked up by accident afterward. The second column was a continuation of the first: there were forty-six items in each, each item numbered consecutively—

''Probably used uranium because it's the largest of the natural atoms,'' Penrose was saying. ''The fact that there's nothing beyond it there shows that they hadn't created any of the transuranics. A student could go to that thing and point out the outer electron of any of the ninety-two elements.''

Ninety-two! That was it; there were ninety-two items in the table on the left wall! Hydrogen was Number One, she knew; One, *Sarfaldsorn*. Helium was Two; that was *Tirfaldsorn*. She couldn't remember which element came next, but in Martian it was *Sarfalddavas. Sorn* must mean matter, or substance, then. And *davas*; she was trying to think of what it could be. She turned quickly to the others, catching hold of Hubert Penrose's arm with one hand and waving her clipboard with the other.

''Look at this thing, over here,'' she was clamoring excitedly. ''Tell me what you think it is. Could it be a table of the elements?''

They all turned to look. Mort Tranter stared at it for a moment.

''Could be. If I only knew what those squiggles meant—''

That was right; he'd spent his time aboard the ship.

''If you could read the numbers, would that help?'' she asked, beginning to set down the Arabic digits and their Martian equivalents. ''It's decimal system, the same as we use.''

''Sure. If that's a table of elements, all I'd need would be the numbers. Thanks,'' he added as she tore off the sheet and gave it to him.

Penrose knew the numbers, and was ahead of him. ''Ninety-two items, numbered consecutively. The first number would be the atomic number. Then a single word, the name of the element. Then the atomic weight—''

She began reading off the names of the elements. "I know hydrogen and helium; what's *tirfalddavas*, the third one?"

"Lithium," Tranter said. "The atomic weights aren't run out past the decimal point. Hydrogen's one plus, if that double-hook dingus is a plus sign; Helium's four-plus, that's right. And lithium's given as seven, that isn't right. It's six-point nine-four-oh. Or is that thing a Martian minus sign?"

"Of course! Look! A plus sign is a hook, to hang things together; a minus sign is a knife, to cut something off from something—see, the little loop is the handle and the long pointed loop is the blade. Stylized, of course, but that's what it is. And the fourth element, kiradavas; what's that?"

"Beryllium. Atomic weight given as nine-and-a-hook; actually it's nine-point-oh-two."

Sid Chamberlain had been disgruntled because he couldn't get a story about the Martians having developed atomic energy. It took him a few minutes to understand the newest development, but finally it dawned on him.

"Hey! You're reading that!" he cried. "You're reading Martian!"

"That's right," Penrose told him. "Just reading it right off. I don't get the two items after the atomic weight, though. They look like months of the Martian calendar. What ought they to be, Mort?"

Tranter hesitated. "Well, the next information after the atomic weight ought to be the period and group numbers. But those are words."

"What would the numbers be for the first one, hydrogen?"

"Period One, Group One. One electron shell, one electron in the outer shell," Tranter told her. "Helium's period one, too, but it has the outer—only—electron shell full, so it's in the group of inert elements."

"*Trav, Trav. Trav's* the first month of the year. And helium's *Trav, Yenth; Yenth* is the eighth month."

"The inert elements could be called Group Eight, yes. And the third element, lithium, is Period Two, Group One. That check?"

"It certainly does. *Sanv, Trav; Sanv's* the second month. What's the first element in Period Three?"

"Sodium. Number Eleven."

That's right; it's *Krav, Trav*. Why, the names of the months are simply numbers, one to ten, spelled out.

"*Doma's* the fifth month. That was your first Martian word, Martha," Penrose told her. "The word for five. And if *davas* is the word for metal, and *sornhulva* is chemistry and / or physics, I'll bet Tadavas Sornhulva is literally translated as: Of-Metal Matter-Knowledge. Metallurgy, in other words. I wonder what Mastharnorvod means." It surprised her that, after so long and with so much hap-

pening in the meantime, he could remember that. "Something like 'Journal,' or 'Review,' or maybe 'Quarterly.'"

"We'll work that out, too," she said confidently. After this, nothing seemed impossible. "Maybe we can find—" Then she stopped short. "You said 'Quarterly.' I think it was 'Monthly,' instead. It was dated for a specific month, the fifth one. And if nor is ten, Mastharnorvod could be 'Year-Tenth.' And I'll bet we'll find that masthar is the word for year." She looked at the table on the wall again. "Well, let's get all these words down, with translations for as many as we can."

"Let's take a break for a minute," Penrose suggested, getting out his cigarettes. "And then, let's do this in comfort. Jeff, suppose you and Sid go across the hall and see what you find in the other room in the way of a desk or something like that, and a few chairs. There'll be a lot of work to do on this."

Sid Chamberlain had been squirming as though he were afflicted with ants, trying to contain himself. Now he let go with an excited jabber.

"This is really it! *The* it, not just it-of-the-week, like finding the reservoirs or those statues or this building, or even the animals and the dead Martians! Wait till Selim and Tony see this! Wait till Tony sees it; I want to see his face! And when I get this on telecast, all Terra's going to go nuts about it!" He turned to Captain Miles. "Jeff, suppose you take a look at that other door, while I find somebody to send to tell Selim and Tony. And Gloria; wait till she sees this—"

"Take it easy, Sid," Martha cautioned. "You'd better let me have a look at your script, before you go too far overboard on the telecast. This is just a beginning; it'll take years and years before we're able to read any of those books downstairs."

"It'll go faster than you think, Martha," Hubert Penrose told her. "We'll all work on it, and we'll teleprint material to Terra, and people there will work on it. We'll send them everything we can ... everything we work out, and copies of books, and copies of your word-lists—"

And there would be other tables—astronomical tables, tables in physics and mechanics, for instance—in which words and numbers were equivalent. The library stacks, below, would be full of them. Transliterate them into Roman alphabet spellings and Arabic numerals, and somewhere, somebody would spot each numerical significance, as Hubert Penrose and Mort Tranter and she had done with the table of elements. And pick out all the chemistry textbooks in the Library; new words would take on meaning from contexts in which the names of elements appeared. She'd have to start studying chemistry and physics, herself—

Sachiko Koremitsu peeped in through the door, then stepped inside.

"Is there anything I can do—?" she began. "What's happened? Something important?"

"Important?" Sid Chamberlain exploded. "Look at that, Sachi! We're read-

ing it! Martha's found out how to read Martian!'' He grabbed Captain Miles by the arm. ''Come on, Jeff; let's go. I want to call the others—'' He was still babbling as he hurried from the room.

Sachi looked at the inscription. ''Is it true?'' she asked, and then, before Martha could more than begin to explain, flung her arms around her. ''Oh, it really is! You are reading it! I'm so happy!''

She had to start explaining again when Selim von Ohlmhorst entered. This time, she was able to finish.

''But, Martha, can you be really sure? You know, by now, that learning to read this language is as important to me as it is to you, but how can you be so sure that those words really mean things like hydrogen and helium and boron and oxygen? How do you know that their table of elements was anything like ours?''

Tranter and Penrose and Sachiko all looked at him in amazement.

''That isn't just the Martian table of elements; that's *the* table of elements. It's the only one there is.'' Mort Tranter almost exploded. ''Look, hydrogen has one proton and one electron. If it had more of either, it wouldn't be hydrogen, it'd be something else. And the same with all the rest of the elements. And hydrogen on Mars is the same as hydrogen on Terra, or on Alpha Centauri, or in the next galaxy—''

''You just set up those numbers, in that order, and any first-year chemistry student could tell you what elements they represented.'' Penrose said. ''Could if he expected to make a passing grade, that is.''

The old man shook his head slowly, smiling. ''I'm afraid I wouldn't make a passing grade. I didn't know, or at least didn't realize, that. One of the things I'm going to place an order for, to be brought on the *Schiaparelli*, will be a set of primers in chemistry and physics, of the sort intended for a bright child of ten or twelve. It seems that a Martiologist has to learn a lot of things the Hittites and the Assyrians never heard about.''

Tony Lattimer, coming in, caught the last part of the explanation. He looked quickly at the walls and, having found out just what had happened, advanced and caught Martha by the hand.

''You really did it, Martha! You found your bilingual! I never believed that it would be possible; let me congratulate you!''

He probably expected that to erase all the jibes and sneers of the past. If he did, he could have it that way. His friendship would mean as little to her as his derision—except that his friends had to watch their backs and his knife. But he was going home on the *Cyrano*, to be a big shot. Or had this changed his mind for him again?

''This is something we can show the world, to justify any expenditure of time and money on Martian archaeological work. When I get back to Terra, I'll see that

you're given full credit for this achievement—''

On Terra, her back and his knife would be out of her watchfulness.

''We won't need to wait that long,'' Hubert Penrose told him dryly. ''I'm sending off an official report, tomorrow; you can be sure Dr. Dane will be given full credit, not only for this but for her previous work, which made it possible to exploit this discovery.''

''And you might add, work done in spite of the doubts and discouragements of her colleagues,'' Selim von Ohlmhorst said. ''To which I am ashamed to have to confess my own share.''

''You said we had to find a bilingual,'' she said. ''You were right, too.''

''This is better than a bilingual, Martha,'' Hubert Penrose said. ''Physical science expresses universal facts; necessarily it is a universal language. Heretofore archaeologists have dealt only with pre-scientific cultures.''

OOMPHEL IN THE SKY

Since Logic derives from postulates, it never has, and never will, change a postulate. And a religious belief is a system of postulates ... so how can a man fight a native superstition with logic? Or anything else...?

Miles Gilbert watched the landscape slide away below him, its quilt of rounded treetops mottled red and orange in the double sunlight and, in shaded places, with the natural yellow of the vegetation of Kwannon. The aircar began a slow swing to the left, and Gettler Alpha came into view, a monstrous smear of red incandescence with an optical diameter of two feet at arm's length, slightly flattened on the bottom by the western horizon. In another couple of hours it would be completely set, but by that time Beta, the planet's G-class primary, would be at its midafternoon hottest. He glanced at his watch. It was 1005, but that was Galactic Standard Time, and had no relevance to anything that was happening in the local sky. It did mean, though, that it was five minutes short of two hours to 'cast-time.

He snapped on the communication screen in front of him, and Harry Walsh, the news editor, looked out of it at him from the office in Bluelake, halfway across the continent. He wanted to know how things were going.

"Just about finished. I'm going to look in at a couple more native villages, and then I'm going to Sanders' plantation to see Gonzales. I hope I'll have a personal statement from him, and the final situation-progress map, in time for the 'cast. I take it Maith's still agreeable to releasing the story at twelve-hundred?"

"Sure; he was always agreeable. The Army wants publicity; it was Government House that wanted to sit on it, and they've given that up now. The story's all over the place here, native city and all."

"What's the situation in town, now?"

"Oh, it's still going on. Some disorders, mostly just unrest. Lot of street meetings that could have turned into frenzies if the police hadn't broken them up in time. A couple of shootings, some sleep-gassing, and a lot of arrests. Nothing to worry about—at least, not immediately."

That was about what he thought. "Maybe it's not bad to have a little trouble in Bluelake," he considered. "What happens out here in the plantation country the Government House crowd can't see, and it doesn't worry them. Well, I'll call you from Sanders'."

He blanked the screen. In the seat in front, the native pilot said: "Some contragravity up ahead, boss." It sounded like two voices speaking in unison, which was just what it was. "I'll have a look."

The pilot's hand, long and thin, like a squirrel's, reached up and pulled down the fifty-power binoculars on their swinging arm. Miles looked at the screen-map and saw a native village just ahead of the dot of light that marked the position of the aircar. He spoke the native name of the village aloud, and added:

"Let down there, Heshto. I'll see what's going on."

The native, still looking through the glasses, said, "Right, boss." Then he turned.

His skin was blue-gray and looked like sponge rubber. He was humanoid, to the extent of being an upright biped, with two arms, a head on top of shoulders, and a torso that housed, among other oddities, four lungs. His face wasn't even vaguely human. He had two eyes in front, close enough for stereoscopic vision, but that was a common characteristic of sapient life forms everywhere. His mouth was strictly for eating; he breathed through separate intakes and outlets, one of each on either side of his neck; he talked through the outlets and had his scent and hearing organs in the intakes. The car was air-conditioned, which was a mercy; an overheated Kwann exhaled through his skin, and surrounded himself with stenches like an organic chemistry lab. But then, Kwanns didn't come any closer to him than they could help when he was hot and sweated, which, lately, had been most of the time.

"A V and a half of air cavalry, circling around," Heshto said. "Making sure nobody got away. And a combat car at a couple of hundred feet and another one just at treetop level."

He rose and went to the seat next to the pilot, pulling down the binoculars that were focused for his own eyes. With them, he could see the air cavalry—egg-shaped things just big enough for a seated man, with jets and contragravity field generators below and a bristle of machine gun muzzles in front. A couple of them jetted up for a look at him and then went slanting down again, having recognized the Kwannon Planetwide News Service car.

The village was typical enough to have been an illustration in a sociography textbook—fields in a belt for a couple of hundred yards around it, dome-thatched mud-and-wattle huts inside a pole stockade with log storehouses built against it, their flat roofs high enough to provide platforms for defending archers, the open oval gathering-place in the middle. There was a big hut at one end of this, the khamdoo, the sanctum of the adult males, off limits for women and children. A small crowd was gathered in front of it; fifteen or twenty Terran air cavalrymen, a couple of enlisted men from the Second Kwannon Native Infantry, a Terran second lieutenant, and half a dozen natives. The rest of the village population, about two

hundred, of both sexes and all ages, were lined up on the shadier side of the gathering-place, most of them looking up apprehensively at the two combat cars which were covering them with their guns.

Miles got to his feet as the car lurched off contragravity and the springs of the landing-feet took up the weight. A blast of furnacelike air struck him when he opened the door; he got out quickly and closed it behind him. The second lieutenant had come over to meet him; he extended his hand.

"Good day, Mr. Gilbert. We all owe you our thanks for the warning. This would have been a real baddie if we hadn't caught it when we did."

He didn't even try to make any modest disclaimer; that was nothing more than the exact truth.

"Well, lieutenant, I see you have things in hand here." He glanced at the line-up along the side of the oval plaza, and then at the selected group in front of the khamdoo. The patriarchal village chieftain in a loose slashed shirt; the shoonoo, wearing a multiplicity of amulets and nothing else; four or five of the village elders. "I take it the word of the swarming didn't get this far?"

"No, this crowd still don't know what the flap's about, and I couldn't think of anything to tell them that wouldn't be worse than no explanation at all."

He had noticed hoes and spades flying in the fields, and the cylindrical plastic containers the natives bought from traders, dropped when the troops had surprised the women at work. And the shoonoo didn't have a fire-dance cloak or any other special regalia on. If he'd heard about the swarming, he'd have been dressed to make magic for it.

"What time did you get here, lieutenant?"

"Oh-nine-forty. I just called in and reported the village occupied, and they told me I was the last one in, so the operation's finished."

That had been smart work. He got the lieutenant's name and unit and mentioned it into his memophone. That had been a little under five hours since he had convinced General Maith, in Bluelake, that the mass labor-desertion from the Sanders plantation had been the beginning of a swarming. Some division commanders wouldn't have been able to get a brigade off the ground in that time, let alone landed on objective. He said as much to the young officer.

"The way the Army responded, today, can make the people of the Colony feel a lot more comfortable for the future."

"Why, thank you, Mr. Gilbert." The Army, on Kwannon, was rather more used to obloquy than praise. "How did you spot what was going on so quickly?"

This was the hundredth time, at least, that he had been asked that today.

"Well, Paul Sanders' labor all comes from neighboring villages. If they'd just wanted to go home and spend the end of the world with their families, they'd have

been dribbling away in small batches for the last couple of hundred hours. Instead, they all bugged out in a bunch, they took all the food they could carry and nothing else, and they didn't make any trouble before they left. Then, Sanders said they'd been building fires out in the fallow ground and moaning and chanting around them for a couple of days, and idling on the job. Saving their strength for the trek. And he said they had a shoonoo among them. He's probably the lad who started it. Had a dream from the Gone Ones, I suppose."

"You mean, like this fellow here?" the lieutenant asked. "What are they, Mr. Gilbert; priests?"

He looked quickly at the lieutenant's collar-badges. Yellow trefoil for Third Fleet-Army Force, Roman IV for Fourth Army, 907 for his regiment, with C under it for cavalry. That outfit had only been on Kwannon for the last two thousand hours, but somebody should have briefed him better than that.

He shook his head. "No, they're magicians. Everything these Kwanns do involves magic, and the shoonoon are the professionals. When a native runs into something serious, that his own do-it-yourself magic can't cope with, he goes to the shoonoo. And, of course, the shoonoo works all the magic for the community as a whole—rain-magic, protective magic for the village and the fields, that sort of thing."

The lieutenant mopped his face on a bedraggled handkerchief. "They'll have to struggle along somehow for a while; we have orders to round up all the shoonoon and send them in to Bluelake."

"Yes." That hadn't been General Maith's idea; the governor had insisted on that. "I hope it doesn't make more trouble than it prevents."

The lieutenant was still mopping his face and looking across the gathering-place toward Alpha, glaring above the huts.

"How much worse do you think this is going to get?" he asked.

"The heat, or the native troubles?"

"I was thinking about the heat, but both."

"Well, it'll get hotter. Not much hotter, but some. We can expect storms, too, within twelve to fifteen hundred hours. Nobody has any idea how bad they'll be. The last periastron was ninety years ago, and we've only been here for sixty-odd; all we have is verbal accounts from memory from the natives, probably garbled and exaggerated. We had pretty bad storms right after transit a year ago; they'll be much worse this time. Thermal convections; air starts to cool when it gets dark, and then heats up again in double-sun daylight."

It was beginning, even now; starting to blow a little after Alpha-rise.

"How about the natives?" the lieutenant asked. "If they can get any crazier than they are now—"

"They can, and they probably will. They think this is the end of the world. The Last Hot Time." He used the native expression, and then translated it into Lingua Terra. "The Sky Fire—that's Alpha—will burn up the whole world."

"But this happens every ninety years. Mean they always acted this way at periastron?"

He shook his head. "Race would have exterminated itself long ago if they had. No, this is something special. The coming of the Terrans was a sign. The Terrans came and brought oomphel to the world; this a sign that the Last Hot Time is at hand."

"What the devil is oomphel?" The lieutenant was mopping the back of his neck with one hand, now, and trying to pull his sticky tunic loose from his body with the other. "I hear that word all the time."

"Well, most Terrans, including the old Kwannon hands, use it to mean tradegoods. To the natives, it means any product of Terran technology, from paperclips to spaceships. They think it's ... well, not exactly supernatural; extranatural would be closer to expressing their idea. Terrans are natural; they're just a different kind of people. But oomphel isn't; it isn't subject to any of the laws of nature at all. They're all positive that we don't make it. Some of them even think it makes us."

When he got back in the car, the native pilot, Heshto, was lolling in his seat and staring at the crowd of natives along the side of the gathering-place with undisguised disdain. Heshto had been educated at one of the Native Welfare Commission schools, and post-graded with Kwannon Planetwide News. He could speak, read and write Lingua Terra. He was a mathematician as far as long division and decimal fractions. He knew that Kwannon was the second planet of the Gettler Beta system, 23,000 miles in circumference, rotating on its axis once in 22.8 Galactic Standard hours and making an orbital circuit around Gettler Beta once in 372.06 axial days, and that Alpha was an M-class pulsating variable with an average period of four hundred days, and that Beta orbited around it in a long elipse every ninety years. He didn't believe there was going to be a Last Hot Time. He was an intellectual, he was.

He started the contragravity-field generator as soon as Miles was in his seat. "Where now, boss?" he asked.

"Qualpha's Village. We won't let down; just circle low over it. I want some views of the ruins. Then to Sanders' plantation."

"O.K., boss; hold tight."

He had the car up to ten thousand feet. Aiming it in the map direction of Qualpha's Village, he let go with everything he had—hot jets, rocket-booster and all. The forest landscape came hurtling out of the horizon toward them.

Qualpha's was where the trouble had first broken out, after the bug-out from

Sanders; the troops hadn't been able to get there in time, and it had been burned. Another village, about the same distance south of the plantation, had also gone up in flames, and at a dozen more they had found the natives working themselves into frenzies and had had to sleep-gas them or stun them with concussion-bombs. Those had been the villages to which the deserters from Sanders' had themselves gone; from every one, runners had gone out to neighboring villages—"The Gone Ones are returning; all the People go to greet them at the Deesha-Phoo. Burn your villages; send on the word. Hasten; the Gone Ones return!"

Saving some of those villages had been touch-and-go, too; the runners, with hours lead-time, had gotten there ahead of the troops, and there had been shooting at a couple of them. Then the Army contragravity began landing at villages that couldn't have been reached in hours by foot messengers. It had been stopped—at least for the time, and in this area. When and where another would break out was anybody's guess.

The car was slowing and losing altitude, and ahead he could see thin smoke rising above the trees. He moved forward beside the pilot and pulled down his glasses; with them he could distinguish the ruins of the village. He called Bluelake, and then put his face to the view-finder and began transmitting in the view.

It had been a village like the one he had just visited, mud-and-wattle huts around an oval gathering-place, stockade, and fields beyond. Heshto brought the car down to a few hundred feet and came coasting in on momentum helped by an occasional spurt of the cold-jets. A few sections of the stockade still stood, and one side of the khamdoo hadn't fallen, but the rest of the structures were flat. There wasn't a soul, human or parahuman, in sight; the only living thing was a small black-and-gray quadruped investigating some bundles that had been dropped in the fields, in hope of finding something tasty. He got a view of that—everybody liked animal pictures on a newscast—and then he was swinging the pickup over the still-burning ruins. In the ashes of every hut he could see the remains of something like a viewscreen or a nuclear-electric stove or a refrigerator or a sewing machine. He knew how dearly the Kwanns cherished such possessions. That they had destroyed them grieved him. But the Last Hot Time was at hand; the whole world would be destroyed by fire, and then the Gone Ones would return.

So there were uprisings on the plantations. Paul Sanders had been lucky; his Kwanns had just picked up and left. But he had always gotten along well with the natives, and his plantation house was literally a castle and he had plenty of armament. There had been other planters who had made the double mistake of incurring the enmity of their native labor and of living in unfortified houses. A lot of them weren't around, any more, and their plantations were gutted ruins.

And there were plantations on which the natives had destroyed the klooba plants and smashed the crystal which lived symbiotically upon them. They thought

the Terrans were using the living crystals to make magic. Not too far off, at that; the properties of Kwannon biocrystals had opened a major breakthrough in subnucleonic physics and initiated half a dozen technologies. New kinds of oomphel. And down in the south, where the spongy and resinous trees were drying in the heat, they were starting forest fires and perishing in them in hecatombs. And to the north, they were swarming into the mountains; building great fires there, too, and attacking the Terran radar and radio beacons.

Fire was a factor common to all these frenzies. Nothing could happen without magical assistance; the way to bring on the Last Hot Time was People.

Maybe the ones who died in the frenzies and the swarmings were the lucky ones at that. They wouldn't live to be crushed by disappointment when the Sky Fire receded as Beta went into the long swing toward apastron. The surviving shoonoon wouldn't be the lucky ones, that was for sure. The magician-in-public-practice needs only to make one really bad mistake before he is done to some unpleasantly ingenious death by his clientry, and this was going to turn out to be the biggest magico-prophetic blooper in all the long unrecorded history of Kwannon.

A few minutes after the car turned south from the ruined village, he could see contragravity-vehicles in the air ahead, and then the fields and buildings of the Sanders plantation. A lot more contragravity was grounded in the fallow fields, and there were rows of pneumatic balloon-tents, and field-kitchens, and a whole park of engineering equipment. Work was going on in the klooba-fields, too; about three hundred natives were cutting open the six-foot leafy balls and getting out the biocrystals. Three of the plantation airjeeps, each with a pair of machine guns, were guarding them, but they didn't seem to be having any trouble. He saw Sanders in another jeep, and had Heshto put the car alongside.

"How's it going, Paul?" he asked over his radio. "I see you have some help, now."

"Everybody's from Qualpha's, and from Darshat's," Sanders replied. "The Army had no place to put them, after they burned themselves out." He laughed happily. "Miles, I'm going to save my whole crop! I thought I was wiped out, this morning."

He would have been, if Gonzales hadn't brought those Kwanns in. The klooba was beginning to wither; if left unharvested, the biocrystals would die along with their hosts and crack into worthlessness. Like all the other planters, Sanders had started no new crystals since the hot weather, and would start none until the worst of the heat was over. He'd need every crystal he could sell to tide him over.

"The Welfarers'll make a big forced-labor scandal out of this," he predicted.

"Why, such an idea." Sanders was scandalized. "I'm not forcing them to eat."

"The Welfarers don't think anybody ought to have to work to eat. They think

everybody ought to be fed whether they do anything to earn it or not, and if you try to make people earn their food, you're guilty of economic coercion. And if you're in business for yourself and want them to work for you, you're an exploiter and you ought to be eliminated as a class. Haven't you been trying to run a plantation on this planet, under this Colonial Government, long enough to have found that out, Paul?''

Brigadier General Ramon Gonzales had taken over the first—counting down from the landing-stage—floor of the plantation house for his headquarters. His headquarters company had pulled out removable partitions and turned four rooms into one, and moved in enough screens and teleprinters and photoprint machines and computers to have outfitted the main newsroom of *Planetwide News*. The place had the feel of a newsroom—a newsroom after a big story has broken and the 'cast has gone on the air and everybody—in this case about twenty Terran officers and non-coms, half women—standing about watching screens and smoking and thinking about getting a follow-up ready.

Gonzales himself was relaxing in Sanders' business-room, with his belt off and his tunic open. He had black eyes and black hair and mustache, and a slightly equine face that went well with his Old Terran Spanish name. There was another officer with him, considerably younger—Captain Foxx Travis, Major General Maith's aide.

''Well, is there anything we can do for you, Miles?'' Gonzales asked, after they had exchanged greetings and sat down.

''Why, could I have your final situation-progress map? And would you be willing to make a statement on audio-visual.'' He looked at his watch. ''We have about twenty minutes before the 'cast.''

''You have a map,'' Gonzales said, as though he were walking tiptoe from one word to another. ''It accurately represents the situation as of the moment, but I'm afraid some minor unavoidable inaccuracies may have crept in while marking the positions and times for the earlier phases of the operation. I teleprinted a copy to *Planetwide* along with the one I sent to Division Headquarters.''

He understood about that and nodded. Gonzales was zipping up his tunic and putting on his belt and sidearm. That told him, before the brigadier general spoke again, that he was agreeable to the audio-visual appearance and statement. He called the recording studio at *Planetwide* while Gonzales was inspecting himself in the mirror and told them to get set for a recording. It only ran a few minutes; Gonzales, speaking without notes, gave a brief description of the operation.

''At present,'' he concluded, ''we have every native village and every plantation and trading-post within two hundred miles of the Sanders plantation occupied. We feel that this swarming has been definitely stopped, but we will continue the occupation for at least the next hundred to two hundred hours. In the

meantime, the natives in the occupied villages are being put to work building shelters for themselves against the anticipated storms.''

''I hadn't heard about that,'' Miles said, as the general returned to his chair and picked up his drink again.

''Yes. They'll need something better than these thatched huts when the storms start, and working on them will keep them out of mischief. Standard megaton-kilometer field shelters, earth and log construction. I think they'll be adequate for anything that happens at periastron.''

Anything designed to resist the heat, blast and radiation effects of a megaton thermonuclear bomb at a kilometer ought to stand up under what was coming. At least, the periastron effects; there was another angle to it.

''The Native Welfare Commission isn't going to take kindly to that. That's supposed to be their job.''

''Then why the devil haven't they done it?'' Gonzales demanded angrily. ''I've viewed every native village in this area by screen, and I haven't seen one that's equipped with anything better than those log storage-bins against the stockades.''

''There was a project to provide shelters for the periastron storms set up ten years ago. They spent one year arguing about how the natives survived storms prior to the Terrans' arrival here. According to the older natives, they got into those log storage-houses you were mentioning; only about one out of three in any village survived. I could have told them that. Did tell them, repeatedly, on the air. Then, after they decided that shelters were needed, they spent another year hassling over who would be responsible for designing them. Your predecessor here, General Nokami, offered the services of his engineer officers. He was frostily informed that this was a humanitarian and not a military project.''

Ramon Gonzales began swearing, then apologized for the interruption. ''Then what?'' he asked.

''Apology unnecessary. Then they did get a shelter designed, and started teaching some of the students at the native schools how to build them, and then the meteorologists told them it was no good. It was a dugout shelter; the weathermen said there'd be rainfall measured in meters instead of inches and anybody who got caught in one of those dugouts would be drowned like a rat.''

''Ha, I thought of that one.'' Gonzales said. ''My shelters are going to be mounded up eight feet above the ground.''

''What did they do then?'' Foxx Travis wanted to know.

''There the matter rested. As far as I know, nothing has been done on it since.''

''And you think, with a disgraceful record of non-accomplishment like that, that they'll protest General Gonzales' action on purely jurisdictional grounds?'' Travis demanded.

"Not jurisdictional grounds, Foxx. The general's going at this the wrong way. He actually knows what has to be done and how to do it, and he's going right ahead and doing it, without holding a dozen conferences and round-table discussions and giving everybody a fair and equal chance to foul things up for him. You know as well as I do that that's undemocratic. And what's worse, he's making the natives build them themselves, whether they want to or not, and that's forced labor. That reminds me; has anybody started raising the devil about those Kwanns from Qualpha's and Darshat's you brought here and Paul put to work?"

Gonzales looked at Travis and then said: "Not with me. Not yet, anyhow."

"They've been at General Maith," Travis said shortly. After a moment, he added: "General Maith supports General Gonzales completely; that's for publication. I'm authorized to say so. What else was there to do? They'd burned their villages and all their food stores. They had to be placed somewhere. And why in the name of reason should they sit around in the shade eating Government native-type rations while Paul Sanders has fifty to a hundred thousand sols' worth of crystals dying on him?"

"Yes; that's another thing they'll scream about. Paul's making a profit out of it."

"Of course he's making a profit," Gonzales said. "Why else is he running a plantation? If planters didn't make profits, who'd grow biocrystals?"

"The Colonial Government. The same way they built those storm-shelters. But that would be in the public interest, and if the Kwanns weren't public-spirited enough to do the work, they'd be made to—at about half what planters like Sanders are paying them now. But don't you realize that profit is sordid and dishonest and selfish? Not at all like drawing a salary-cum-expense-account from the Government."

"You're right, it isn't," Gonzales agreed. "People like Paul Sanders have ability. If they don't, they don't stay in business. You have ability and people who don't never forgive you for it. Your very existence is a constant reproach to them."

"That's right. And they can't admit your ability without admitting their own inferiority, so it isn't ability at all. It's just dirty underhanded trickery and selfish ruthlessness." He thought for a moment. "How did Government House find out about these Kwanns here?"

"The Welfare Commission had people out while I was still setting up headquarters," Gonzales said. "That was about oh-seven-hundred."

"This isn't for publication?" Travis asked. "Well, they know, but they can't prove, that our given reason for moving in here in force is false. Of course, we can't change our story now; that's why the situation-progress map that was prepared for publication is incorrect as to the earlier phases. They do not know that it was you who gave us our first warning; they ascribe that to Sanders. And they are

claiming that there never was any swarming; according to them, Sanders' natives are striking for better pay and conditions, and Sanders got General Maith to use troops to break the strike. I wish we could give you credit for putting us onto this, but it's too late now."

He nodded. The story was that a battalion of infantry had been sent in to rescue a small detail under attack by natives, and that more troops had been sent in to re-enforce them, until the whole of Gonzales' brigade had been committed.

"That wasted an hour, at the start," Gonzales said. "We lost two native villages burned, and about two dozen casualties, because we couldn't get our full strength in soon enough."

"You'd have lost more than that if Maith had told the governor general the truth and requested orders to act. There'd be a hundred villages and a dozen plantations and trading posts burning, now, and Lord knows how many dead, and the governor general would still be arguing about whether he was justified in ordering troop-action." He mentioned several other occasions when something like that had happened. "You can't tell that kind of people the truth. They won't believe it. It doesn't agree with their preconceptions."

Foxx Travis nodded. "I take it we are still talking for nonpublication?" When Miles nodded, he continued: "This whole situation is baffling, Miles. It seems that the government here knew all about the weather conditions they could expect at periastron, and had made plans for them. Some of them excellent plans, too, but all based on the presumption that the natives would co-operate or at least not obstruct. You see what the situation actually is. It should be obvious to everybody that the behavior of these natives is nullifying everything the civil government is trying to do to ensure the survival of the Terran colonists, the production of Terran-type food without which we would all starve, the biocrystal plantations without which the Colony would perish, and even the natives themselves. Yet the Civil Government will not act to stop these native frenzies and swarmings which endanger everything and everybody here, and when the Army attempts to act, we must use every sort of shabby subterfuge and deceit or the Civil Government will prevent us. What ails these people?"

"You have the whole history of the Colony against you, Foxx," he said. "You know, there never was any Chartered Kwannon Company set up to exploit the resources of the planet. At first, nobody realized that there were any resources worth exploiting. This planet was just a scientific curiosity; it was and is still the only planet of a binary system with a native population of sapient beings. The first people who came here were scientists, mostly sociographers and para-anthropologists. And most of them came from the University of Adelaide."

Travis nodded. Adelaide had a Federation-wide reputation for left-wing neo-Marxist "liberalism."

"Well, that established the political and social orientation of the Colonial Government, right at the start, when study of the natives was the only business of the Colony. You know how these ideological cliques form in a government—or any other organization. Subordinates are always chosen for their agreement with the views of their superiors, and the extremists always get to the top and shove the moderates under or out. Well, the Native Affairs Administration became the tail that wagged the Government dog, and the Native Welfare Commission is the big muscle in the tail."

His parents hadn't been of the left-wing Adelaide clique. His mother had been a biochemist; his father a roving news correspondent who had drifted into trading with the natives and made a fortune in keffa-gum before the chemists on Terra had found out how to synthesize hopkinsine.

"When the biocrystals were discovered and the plantations started, the Government attitude was set. Biocrystal culture is just sordid money grubbing. The real business of the Colony is to promote the betterment of the natives, as defined in University of Adelaide terms. That's to say, convert them into ersatz Terrans. You know why General Maith ordered these shoonoon rounded up?"

Travis made a face. "Governor general Kovac insisted on it; General Maith thought that a few minor concessions would help him on his main objective, which was keeping a swarming from starting out here."

"Yes. The Commissioner of Native Welfare wanted that done, mainly at the urging of the Director of Economic, Educational and Technical Assistance. The EETA crowd don't like shoonoon. They have been trying, ever since their agency was set up, to undermine and destroy their influence with the natives. This looked like a good chance to get rid of some of them."

Travis nodded. "Yes. And as soon as the disturbances in Bluelake started, the Constabulary started rounding them up there, too, and at the evacuee cantonments. They got about fifty of them, mostly from the cantonments east of the city—the natives brought in from the flooded tidewater area. They just dumped the lot of them onto us. We have them penned up in a lorry-hangar on the military reservation now." He turned to Gonzales. "How many do you think you'll gather up out here, general?" he asked.

"I'd say about a hundred and fifty, when we have them all."

Travis groaned. "We can't keep all of them in that hangar, and we don't have anywhere else—"

Sometimes a new idea sneaked up on Miles, rubbing against him and purring like a cat. Sometimes one hit him like a sledgehammer. This one just seemed to grow inside him.

"Foxx, you know I have the top three floors of the Suzikami Building; about five hundred hours ago, I leased the fourth and fifth floors, directly below. I haven't

done anything with them, yet; they're just as they were when Trans-Space Imports moved out. There are ample water, light, power, air-conditioning and toilet facilities, and they can be sealed off completely from the rest of the building. If General Maith's agreeable, I'll take his shoonoon off his hands."

"What in blazes will you do with them?"

"Try a little experiment in psychological warfare. At minimum, we may get a little better insight into why these natives think the Last Hot Time is coming. At best, we may be able to stop the whole thing and get them quieted down again."

"Even the minimum's worth trying for," Travis said. "What do you have in mind, Miles? I mean, what procedure?"

"Well, I'm not quite sure, yet." That was a lie; he was very sure. He didn't think it was quite time to be specific, though. "I'll have to size up my material a little, before I decide on what to do with it. Whatever happens, it won't hurt the shoonoon, and it won't make any more trouble than arresting them has made already. I'm sure we can learn something from them, at least."

Travis nodded. "General Maith is very much impressed with your grasp of native psychology," he said. "What happened out here this morning was exactly as you predicted. Whatever my recommendation's worth, you have it. Can you trust your native driver to take your car back to Bluelake alone?"

"Yes, of course."

"Then suppose you ride in with me in my car. We'll talk about it on the way in, and go see General Maith at once."

Bluelake was peaceful as they flew in over it, but it was an uneasy peace. They began running into military contragravity twenty miles beyond the open farmlands—they were the chlorophyll green of Terran vegetation—and the natives at work in the fields were being watched by more military and police vehicles. The carniculture plants, where Terran-type animal tissue was grown in nutrient-vats, were even more heavily guarded, and the native city was being patroled from above and the streets were empty, even of the hordes of native children who usually played in them.

The Terran city had no streets. Its dwellers moved about on contragravity, and tall buildings rose, singly or in clumps, among the landing-staged residences and the green transplanted trees. There was a triple wire fence around it, the inner one masked by vines and the middle one electrified, with warning lights on. Even a government dedicated to the betterment of the natives and unwilling to order military action against them was, it appeared, unwilling to take too many chances.

Major General Denis Maith, the Federation Army commander on Kwannon, was considerably more than willing to find a temporary home for his witch doctors, now numbering close to two hundred. He did insist that they be kept under

military guard, and on assigning his aide, Captain Travis, to co-operate on the project. Beyond that, he gave Miles a free hand.

Miles and Travis got very little rest in the next ten hours. A half-company of engineer troops was also kept busy, as were a number of Kwannon Planetwide News technicians and some Terran and native mechanics borrowed from different private business concerns in the city. Even the most guarded hints of what he had in mind were enough to get this last co-operation; he had been running a news-service in Bluelake long enough to have the confidence of the business people.

He tried, as far as possible, to keep any intimation of what was going on from Government House. That, unfortunately, hadn't been far enough. He found that out when General Maith was on his screen, in the middle of the work on the fourth and fifth floors of the Suzikami Building.

"The governor general just screened me," Maith said. "He's in a tizzy about our shoonoon. Claims that keeping them in the Suzikami Building will endanger the whole Terran city."

"Is that the best he can do? Well, that's rubbish, and he knows it. There are less than two hundred of them, I have them on the fifth floor, twenty stories above the ground, and the floor's completely sealed off from the floor below. They can't get out, and I have tanks of sleep-gas all over the place which can be opened either individually or all together from a switch on the fourth floor, where your sepoys are quartered."

"I know, Mr. Gilbert; I screen-viewed the whole installation. I've seen regular maximum-security prisons that would be easier to get out of."

"Governor general Kovac is not objecting personally. He has been pressured into it by this Native Welfare government-within-the-Government. They don't know what I'm doing with those shoonoon, but whatever it is, they're afraid of it."

"Well, for the present," Maith said, "I think I'm holding them off. The Civil Government doesn't want the responsibility of keeping them in custody, I refused to assume responsibility for them if they were kept anywhere else, and Kovac simply won't consider releasing them, so that leaves things as they are. I did have to make one compromise, though." That didn't sound good. It sounded less so when Maith continued: "They insisted on having one of their people at the Suzikami Building as an observer. I had to grant that."

"That's going to mean trouble."

"Oh, I shouldn't think so. This observer will observe, and nothing else. She will take no part in anything you're doing, will voice no objections, and will not interrupt anything you are saying to the shoonoon. I was quite firm on that, and the governor general agreed completely."

"She?"

"Yes. A Miss Edith Shaw; do you know anything about her?"

"I've met her a few times; cocktail parties and so on." She was young enough, and new enough to Kwannon, not to have a completely indurated mind. On the other hand, she was EETA which was bad, and had a master's in sociography from Adelaide, which was worse. "When can I look for her?"

"Well, the governor general's going to screen me and find out when you'll have the shoonoon on hand."

Doesn't want to talk to me at all, Miles thought. Afraid he might say something and get quoted.

"For your information, they'll be here inside an hour. They will have to eat, and they're all tired and sleepy. I should say 'bout oh-eight-hundred. Oh, and will you tell the governor general to tell Miss Shaw to bring an overnight kit with her. She's going to need it."

He was up at 0400, just a little after Beta-rise. He might be a civilian bigwheel in an Army psychological warfare project, but he still had four newscasts a day to produce. He spent a couple of hours checking the 0600 'cast and briefing Harry Walsh for the indeterminate period in which he would be acting chief editor and producer. At 0700, Foxx Travis put in an appearance. They went down to the fourth floor, to the little room they had fitted out as command-post, control room and office for Operation Shoonoo.

There was a rectangular black traveling-case, initialed E. S., beside the open office door. Travis nodded at it, and they grinned at one another; she'd come early, possibly hoping to catch them hiding something they didn't want her to see. Entering the office quietly, they found her seated facing the big viewscreen, smoking and watching a couple of enlisted men of the First Kwannon Native Infantry at work in another room where the pickup was. There were close to a dozen lipstick-tinted cigarette butts in the ashtray beside her. Her private face wasn't particularly happy. Maybe she was being earnest and concerned about the betterment of the underpriviledged, or the satanic maneuvers of the selfish planters.

Then she realized that somebody had entered; with a slight start, she turned, then rose. She was about the height of Foxx Travis, a few inches shorter than Miles, and slender. Light blond; green suit costume. She ditched her private face and got on her public one, a pleasant and deferential smile, with a trace of uncertainty behind it. Miles introduced Travis, and they sat down again facing the screen.

It gave a view, from one of the long sides and near the ceiling, of a big room. In the center, a number of seats—the drum-shaped cushions the natives had adopted in place of the seats carved from sections of tree trunk that they had been using when the Terrans had come to Kwannon—were arranged in a semicircle, one in the middle slightly in advance of the others. Facing them were three armchairs, a remote-control box beside one and another Kwann cushion behind and

between the other two. There was a large globe of Kwannon, and on the wall behind the chairs an array of viewscreens.

"There'll be an interpreter, a native Army sergeant, between you and Captain Travis," he said. "I don't know how good you are with native languages, Miss Shaw; the captain is not very fluent."

"Cushions for them, I see, and chairs for the lordly Terrans," she commented. "Never miss a chance to rub our superiority in, do you?"

"I never deliberately force them to adopt our ways," he replied. "Our chairs are as uncomfortable for them as their low seats are for us. Difference, you know, doesn't mean inferiority or superiority. It just means difference."

"Well, what are you trying to do, here?"

"I'm trying to find out a little more about the psychology back of these frenzies and swarmings."

"It hasn't occurred to you to look for them in the economic wrongs these people are suffering at the hands of the planters and traders, I suppose."

"So they're committing suicide, and that's all you can call these swarmings, and the fire-frenzies in the south, from economic motives," Travis said. "How does one better oneself economically by dying?"

She ignored the question, which was easier than trying to answer it.

"And why are you bothering to talk to these witch doctors? They aren't representative of the native people. They're a lot of cynical charlatans, with a vested interest in ignorance and superstition—"

"Miss Shaw, for the past eight centuries, earnest souls have been bewailing the fact that progress in the social sciences has always lagged behind progress in the physical sciences. I would suggest that the explanation might be in difference of approach. The physical scientist works with physical forces, even when he is trying, as in the case of contragravity, to nullify them. The social scientist works against social forces."

"And the result's usually a miserable failure, even on the physical-accomplishment level," Foxx Travis added. "This storm shelter project that was set up ten years ago and got nowhere, for instance. Ram√≥n Gonzales set up a shelter project of his own seventy-five hours ago, and he's half through with it now."

"Yes, by forced labor!"

"Field surgery's brutal, too, especially when the anaesthetics run out. It's better than letting your wounded die, though."

"Well, we were talking about these shoonoon. They are a force among the natives; that can't be denied. So, since we want to influence the natives, why not use them?"

"Mr. Gilbert, these shoonoon are blocking everything we are trying to do

for the natives. If you use them for propaganda work in the villages, you will only increase their prestige and make it that much harder for us to better the natives' condition, both economically and culturally—''

''That's it, Miles,'' Travis said. ''She isn't interested in facts about specific humanoid people on Kwannon. She has a lot of high-order abstractions she got in a classroom at Adelaide on Terra.''

''No. Her idea of bettering the natives' condition is to rope in a lot of young Kwanns, put them in Government schools, overload them with information they aren't prepared to digest, teach them to despise their own people, and then send them out to the villages, where they behave with such insufferable arrogance that the wonder is that so few of them stop an arrow or a charge of buckshot, instead of so many. And when that happens, as it does occasionally, Welfare says they're murdered at the instigation of the shoonoon.''

''You know, Miss Shaw, this isn't just the roughneck's scorn for the egghead,'' Travis said. ''Miles went to school on Terra, and majored in extraterrestrial sociography, and got a master's, just like you did. At Montevideo,'' he added. ''And he spent two more years traveling on a Paula von Schlicten Fellowship.''

Edith Shaw didn't say anything. She even tried desperately not to look impressed. It occurred to him that he'd never mentioned that fellowship to Travis. Army Intelligence must have a pretty good *dossier* on him. Before anybody could say anything further, a Terran captain and a native sergeant of the First K.N.I. came in. In the screen, the four sepoys who had been fussing around straightening things picked up auto-carbines and posted themselves two on either side of a door across from the pickup, taking positions that would permit them to fire into whatever came through without hitting each other.

What came through was one hundred and eighty-four shoonoon. Some wore robes of loose gauze strips, and some wore fire-dance cloaks of red and yellow and orange ribbons. Many were almost completely naked, but they were all amulet-ed to the teeth. There must have been a couple of miles of brass and bright-alloy wire among them, and half a ton of bright scrap-metal, and the skulls, bones, claws, teeth, tails and other components of most of the native fauna. They debouched into the big room, stopped, and stood looking around them. A native sergeant and a couple more sepoys followed. They got the shoonoon over to the semicircle of cushions, having to chase a couple of them away from the single seat at front and center, and induced them to sit down.

The native sergeant in the little room said something under his breath; the captain laughed. Edith Shaw gaped for an instant and said, ''*Muggawsh*!'' Travis simply remarked that he'd be damned.

''They do look kind of unusual, don't they?'' Miles said. ''I wouldn't doubt that this is the biggest assemblage of shoonoon in history. They aren't exactly a gre-

garious lot.''

''Maybe this is the beginning of a new era. First meeting of the Kwannon Thaumaturgical Society.''

A couple more K.N.I. privates came in with serving-tables on contragravity floats and began passing bowls of a frozen native-food delicacy of which all Kwanns had become passionately fond since its introduction by the Terrans. He let them finish, and then, after they had been relieved of the empty bowls, he nodded to the K.N.I. sergeant, who opened a door on the left. They all went through into the room they had been seeing in the screen. There was a stir when the shoonoon saw him, and he heard his name, in its usual native mispronunciation, repeated back and forth.

''You all know me,'' he said, after they were seated. ''Have I ever been an enemy to you or to the People?''

''No,'' one of them said. ''He speaks for us to the other Terrans. When we are wronged, he tries to get the wrongs righted. In times of famine he has spoken of our troubles, and gifts of food have come while the Government argued about what to do.''

He wished he could see Edith Shaw's face.

''There was a sickness in our village, and my magic could not cure it,'' another said. ''Mailsh Heelbare gave me oomphel to cure it, and told me how to use it. He did this privately, so that I would not be made to look small to the people of the village.''

And that had infuriated EETA; it was a question whether unofficial help to the natives or support of the prestige of a shoonoo had angered them more.

''His father was a trader; he gave good oomphel, and did not cheat. Mailsh Heelbare grew up among us; he took the Manhood Test with the boys of the village,'' another oldster said. ''He listened with respect to the grandfather-stories. No, Mailsh Heelbare is not our enemy. He is our friend.''

''And so I will prove myself now,'' he told them. ''The Government is angry with the People, but I will try to take their anger away, and in the meantime I am permitted to come here and talk with you. Here is a chief of soldiers, and one of the Government people, and your words will be heard by the oomphel machine that remembers and repeats, for the Governor and the Great Soldier Chief.''

They all brightened. To make a voice recording was a wonderful honor. Then one of them said:

''But what good will that do now? The Last Hot Time is here. Let us be permitted to return to our villages, where our people need us.''

''It is of that that I wish to speak. But first of all, I must hear your words, and know what is in your minds. Who is the eldest among you? Let him come forth and

sit in the front, where I may speak with him.''

Then he relaxed while they argued in respectfully subdued voices. Finally one decrepit oldster, wearing a cloak of yellow ribbons and carrying a highly obscene and ineffably sacred wooden image, was brought forward and installed on the front-and-center cushion. He'd come from some village to the west that hadn't gotten the word of the swarming; Gonzales' men had snagged him while he was making crop-fertility magic.

Miles showed him the respect due his advanced age and obviously great magical powers, displaying, as he did, an understanding of the regalia.

''I have indeed lived long,'' the old shoonoo replied. ''I saw the Hot Time before; I was a child of so high.'' He measured about two and a half feet off the floor; that would make him ninety-five or thereabouts. ''I remember it.''

''Speak to us, then. Tell us of the Gone Ones, and of the Sky Fire, and of the Last Hot Time. Speak as though you alone knew these things, and as though you were teaching me.''

Delighted, the oldster whooshed a couple of times to clear his outlets and began:

''In the long-ago time, there was only the Great Spirit. The Great Spirit made the World, and he made the People. In that time, there were no more People in the World than would be in one village, now. The Gone Ones dwelt among them, and spoke to them as I speak to you. Then, as more People were born, and died and went to join the Gone Ones, the Gone Ones became many, and they went away and build a place for themselves, and built the Sky Fire around it, and in the Place of the Gone Ones, at the middle of the Sky Fire, it is cool. From their place in the Sky Fire, the Gone Ones send wisdom to the people in dreams.

''The Sky Fire passes across the sky, from east to west, as the Always-Same does, but it is farther away than the Always-Same, because sometimes the Always Same passes in front of it, but the Sky Fire never passes in front of the Always-Same. None of the grandfather-stories, not even the oldest, tell of a time when this happened.

''Sometimes the Sky Fire is big and bright; that is when the Gone Ones feast and dance. Sometimes it is smaller and dimmer; then the Gone Ones rest and sleep. Sometimes it is close, and there is a Hot Time; sometimes it goes far away, and then there is a Cool Time.

''Now, the Last Hot Time has come. The Sky Fire will come closer and closer, and it will pass the Always-Same, and then it will burn up the World. Then will be a new World, and the Gone Ones will return, and the People will be given new bodies. When this happens, the Sky Fire will go out, and the Gone Ones will live in the World again with the People; the Gone Ones will make great magic and teach wisdom as I teach to you, and will no longer have to send dreams. In that

time the crops will grow without planting or tending or the work of women; in that time, the game will come into the villages to be killed in the gathering-places. There will be no more hunger and no more hard work, and no more of the People will die or be slain. And that time is now here," he finished. "All the People know this."

"Tell me, Grandfather; how is this known? There have been many Hot Times before. Why should this one be the Last Hot Time?"

"The Terrans have come, and brought oomphel into the World," the old shoonoo said. "It is a sign."

"It was not prophesied beforetime. None of the People had prophesies of the coming of the Terrans. I ask you, who were the father of children and the grandfather of children's children when the Terrans came; was there any such prophesy?"

The old shoonoo was silent, turning his pornographic ikon in his hands and looked at it.

"No," he admitted, at length. "Before the Terrans came, there were no prophesies among the People of their coming. Afterward, of course, there were many such prophesies, but there were none before."

"That is strange. When a happening is a sign of something to come, it is prophesied beforetime." He left that seed of doubt alone to grow, and continued: "Now, Grandfather, speak to us about what the People believe concerning the Terrans."

"The Terrans came to the World when my eldest daughter bore her first child," the old shoonoo said. "They came in great round ships, such as come often now, but which had never before been seen. They said that they came from another world like the World of People, but so far away that even the Sky Fire could not be seen from it. They still say this, and many of the People believe it, but it is not real.

"At first, it was thought that the Terrans were great shoonoon who made powerful magic, but this is not real either. The Terrans have no magic and no wisdom of their own. All they have is the oomphel, and the oomphel works magic for them and teaches them their wisdom. Even in the schools which the Terrans have made for the People, it is the oomphel which teaches." He went on to describe, not too incorrectly, the reading-screens and viewscreens and audio-visual equipment. "Nor do the Terrans make the oomphel, as they say. The oomphel makes more oomphel for them."

"Then where did the Terrans get the first oomphel?"

"They stole it from the Gone Ones," the old shoonoo replied. "The Gone Ones make it in their place in the middle of the Sky Fire, for themselves and to give to the People when they return. The Terrans stole it from them. For this reason, there is much hatred of the Terrans among the People. The Terrans live in the Dark Place, under the World, where the Sky Fire and the Always-Same go when

they are not in the sky. It is there that the Terrans get the oomphel from the Gone Ones, and now they have come to the World, and they are using oomphel to hold back the Sky-Fire and keep it beyond the Always-Same so that the Last Hot Time will not come and the Gone Ones will not return. For this reason, too, there is much hatred of the Terrans among the People.''

''Grandfather, if this were real there would be good reason for such hatred, and I would be ashamed for what my people had done and were doing. But it is not real.'' He had to rise and hold up his hands to quell the indignant outcry ''Have any of you known me to tell not-real things and try to make the People act as though they were real? Then trust me in this. I will show you real things, which you will all see, and I will give you great secrets, which it is now time for you to have and use for the good of the People. Even the greatest secret,'' he added.

There was a pause of a few seconds. Then they burst out, in a hundred and eighty-four—no, three hundred and sixty eight—voices:

''*The Oomphel Secret, Mailsh Heelbare?*''

He nodded slowly. ''Yes. The Oomphel Secret will be given.''

He leaned back and relaxed again while they were getting over the excitement. Foxx Travis looked at him apprehensively.

''Rushing things, aren't you? What are you going to tell them?''

''Oh, a big pack of lies, I suppose,'' Edith Shaw said scornfully.

Behind her and Travis, the native noncom interpreter was muttering something in his own language that translated roughly as: ''This better be good!''

The shoonoon had quieted, now, and were waiting breathlessly.

''But if the Oomphel Secret is given, what will become of the shoonoon?'' he asked. ''You, yourselves, say that we Terrans have no need for magic, because the oomphel works magic for us. This is real. If the People get the Oomphel Secret, how much need will they have for you shoonoon?''

Evidently that hadn't occurred to them before. There was a brief flurry of whispered—whooshed, rather—conversation, and then they were silent again. The eldest shoonoo said:

''We trust you, Mailsh Heelbare. You will do what is best for the People, and you will not let us be thrown out like broken pots, either.''

''No, I will not,'' he promised. ''The Oomphel Secret will be given to you shoonoon.'' He thought for a moment of Foxx Travis' joking remark about the Kwannon Thaumaturgical Society. ''You have been jealous of one another, each keeping his own secrets,'' he said. ''This must be put away. You will all receive the Oomphel Secret equally, for the good of all the People. You must all swear brotherhood, one with another, and later if any other shoonoo comes to you for the secret, you must swear brotherhood with him and teach it to him. Do you agree to

this?''

The eldest shoonoo rose to his feet, begged leave, and then led the others to the rear of the room, where they went into a huddle. They didn't stay huddled long; inside of ten minutes they came back and took their seats.

''We are agreed, Mailsh Heelbare,'' the spokesman said.

Edith Shaw was impressed, more than by anything else she had seen. ''Well, that was a quick decision!'' she whispered.

''You have done well, Grandfathers. You will not be thrown out by the People like broken pots; you will be greater among them than ever. I will show you how this will be.

''But first, I must speak around the Oomphel Secret.'' He groped briefly for a comprehensible analogy, and thought of a native vegetable, layered like an onion, with a hard kernel in the middle. ''The Oomphel Secret is like a fooshkoot. There are many lesser secrets around it, each of which must be peeled off like the skins of a fooshkoot and eaten. Then you will find the nut in the middle.''

''But the nut of the fooshkoot is bitter,'' somebody said.

He nodded, slowly and solemnly. ''The nut of the fooshkoot is bitter,'' he agreed.

They looked at one another, disquieted by his words. Before anybody could comment, he was continuing:

''Before this secret is given, there are things to be learned. You would not understand it if I gave it to you now. You believe many not-real things which must be chased out of your minds, otherwise they would spoil your understanding.''

That was verbatim what they told adolescents before giving them the Manhood Secret. Some of them huffed a little; most of them laughed. Then one called out: ''Speak on, Grandfather of Grandfathers,'' and they all laughed. That was fine, it had been about time for teacher to crack his little joke. Now he became serious again.

''The first of these not-real things you must chase from your mind is this which you believe about the home of the Terrans. It is not real that they come from the Dark Place under the World. There is no Dark Place under the World.''

Bedlam for a few seconds; that was a pretty stiff jolt. No Dark Place; who ever heard of such a thing? The eldest shoonoo rose, cradling his graven image in his arms, and the noise quieted.

''Mailsh Heelbare, if there is no Dark Place where do the Sky Fire and the Always-Same go when they are not in the sky?''

''They never leave the sky; the World is round, and there is sky everywhere around it.''

They knew that, or had at least heard it, since the Terrans had come. They

just couldn't believe it. It was against common sense. The oldest shoonoo said as much, and more:

"These young ones who have gone to the Terran schools have come to the villages with such tales, but who listens to them? They show disrespect for the chiefs and the elders, and even for the shoonoon. They mock at the Grandfather-stories. They say men should do women's work and women do no work at all. They break taboos, and cause trouble. They are fools."

"Am I a fool, Grandfather? Do I mock at the old stories, or show disrespect to elders and shoonoon? Yet I, Mailsh Heelbare, tell you this. The World is indeed round, and I will show you."

The shoonoo looked contemptuously at the globe. "I have seen those things," he said. "That is not the World; that is only a make-like." He held up his phallic wood-carving. "I could say that this is a make-like of the World, but that would not make it so."

"I will show you for real. We will all go in a ship." He looked at his watch. "The Sky Fire is about to set. We will follow it all around the world to the west, and come back here from the east, and the Sky Fire will still be setting when we return. If I show you that, will you believe me?"

"If you show us for real, and it is not a trick, we will have to believe you."

When they emerged from the escalators, Alpha was just touching the western horizon, and Beta was a little past zenith. The ship was moored on contragravity beside the landing stage, her gangplank run out. The shoonoon, who had gone up ahead, had all stopped short and were staring at her; then they began gabbling among themselves, overcome by the wonder of being about to board such a monster and ride on her. She was the biggest ship any of them had ever seen. Maybe a few of them had been on small freighters; many of them had never been off the ground. They didn't look or act like cynical charlatans or implacable enemies of progress and enlightenment. They were more like a lot of schoolboys whose teacher is taking them on a surprise outing.

"Bet this'll be the biggest day in their lives," Travis said.

"Oh, sure. This'll be a grandfather-story ten generations from now."

"I can't get over the way they made up their minds, down there," Edith Shaw was saying. "Why, they just went and talked for a few minutes and came back with a decision."

They hadn't any organization, or any place to maintain on an organizational pecking-order. Nobody was obliged to attack anybody else's proposition in order to keep up his own status. He thought of the Colonial Government taking ten years not to build those storm-shelters.

Foxx Travis was commenting on the ship, now:

"I never saw that ship before; didn't know there was anything like that on the planet. Why, you could lift a whole regiment, with supplies and equipment—"

"She's been laid up for the last five years, since the heat and the native troubles stopped the tourist business here. She's the old Hesperus. Excursion craft. This sun-chasing trip we're going to make used to be a must for tourists here."

"I thought she was something like that, with all the glassed observation deck forward. Who's the owner?"

"Kwannon Air Transport, Ltd. I told them what I needed her for, and they made her available and furnished officers and crew and provisions for the trip. They were working to put her in commission while we were fitting up the fourth and fifth floors, downstairs."

"You just asked for that ship, and they just let you have it?" Edith Shaw was incredulous and shocked. They wouldn't have done that for the Government.

"They want to see these native troubles stopped, too. Bad for business. You know; selfish profit-move. That's another social force it's a good idea to work with instead of against."

The shoonoon were getting aboard, now, shepherded by the K.N.I. officer and a couple of his men and some of the ship's crew. A couple of sepoys were lugging the big globe that had been brought up from below after them. Everybody assembled on the forward top observation deck, and Miles called for attention and, finally, got it. He pointed out the three viewscreens mounted below the bridge, amidships. One on the left, was tuned to a pickup on the top of the Air Terminal tower, where the Terran city, the military reservation and the spaceport met. It showed the view to the west, with Alpha on the horizon. The one on the right, from the same point, gave a view in the opposite direction, to the east. The middle screen presented a magnified view of the navigational globe on the bridge.

Viewscreens were no novelty to the shoonoon. They were a very familiar type of oomphel. He didn't even need to do more than tell them that the little spot of light on the globe would show the position of the ship. When he was sure that they understood that they could see what was happening in Bluelake while they were away, he called the bridge and ordered Up Ship, telling the officer on duty to hold her at five thousand feet.

The ship rose slowly, turning toward the setting M-giant. Somebody called attention that the views in the screens weren't changing. Somebody else said:

"Of course not. What we see for real changes because the ship is moving. What we see in the screens is what the oomphel on the big building sees, and it does not move. That is for real as the oomphel sees it."

"Nice going," Edith said. "Your class has just discovered relativity." Travis was looking at the eastward viewscreen. He stepped over beside Miles and lowered his voice.

"Trouble over there to the east of town. Big swarm of combat contragravity working on something on the ground. And something's on fire, too."

"I see it."

"That's where those evacuees are camped. Why in blazes they had to bring them here to Bluelake—"

That had been EETA, too. When the solar tides had gotten high enough to flood the coastal area, the natives who had been evacuated from the district had been brought here because the Native Education people wanted them exposed to urban influences. About half of the shoonoon who had been rounded up locally had come in from the tide-inundated area.

"Parked right in the middle of the Terran-type food production area," Travis was continuing.

That was worrying him. Maybe he wasn't used to planets where the biochemistry wasn't Terra-type and a Terran would be poisoned or, at best, starve to death, on the local food; maybe, as a soldier he knew how fragile even the best logistics system can be. It was something to worry about. Travis excused himself and went off in the direction of the bridge. Going to call HQ and find out what was happening.

Excitement among the shoonoon; they had spotted the ship on which they were riding in the westward screen. They watched it until it had vanished from "sight of the seeing-oomphel," and by then were over the upland forests from whence they had been brought to Bluelake. Now and then one of them would identify his own village, and that would start more excitement.

Three infantry troop-carriers and a squadron of air cavalry were rushing past the eastward pickup in the right hand screen; another fire had started in the trouble area.

The crowd that had gathered around the globe that had been brought aboard began calling for Mailsh Heelbare to show them how they would go around the world and what countries they would pass over. Edith accompanied him and listened while he talked to them. She was bubbling with happy excitement, now. It had just dawned on her that shoonoon were fun.

None of them had ever seen the mountains along the western side of the continent except from a great distance. Now they were passing over them; the ship had to gain altitude and even then make a detour around one snow-capped peak. The whole hundred and eighty-four rushed to the starboard side to watch it as they passed. The ocean, half an hour later, started a rush forward. The score or so of them from the Tidewater knew what an ocean was, but none of them had known that there was another one to the west. Miles' view of the education program of the EETA, never bright at best, became even dimmer. *The young men who have gone to the Terran schools ... who listens to them? They are fools.*

There were a few islands off the coast; the shoonoon identified them on the screen globe, and on the one on deck. Some of them wanted to know why there wasn't a spot of light on this globe, too. It didn't have the oomphel inside to do that; that was a satisfactory explanation. Edith started to explain about the orbital beacon-stations off-planet and the radio beams, and then stopped.

"I'm sorry; I'm not supposed to say anything to them," she apologized.

"Oh, that's all right. I wouldn't go into all that, though. We don't want to overload them."

She asked permission, a little later, to explain why the triangle tip of the arctic continent, which had begun to edge into sight on the screen globe, couldn't be seen from the ship. When he told her to go ahead, she got a platinum half-sol piece from her purse, held it on the globe from the classroom and explained about the curvature and told them they could see nothing farther away than the circle the coin covered. It was beginning to look as though the psychological-warfare experiment might show another, unexpected, success.

There was nothing, after the islands passed, but a lot of empty water. The shoonoon were getting hungry, but they refused to go below to eat. They were afraid they might miss something. So their dinner was brought up on deck for them. Miles and Travis and Edith went to the officers' dining room back of the bridge. Edith, by now, was even more excited than the shoonoon.

"They're so anxious to learn!" She was having trouble adjusting to that; that was dead against EETA doctrine. "But why wouldn't they listen to the teachers we sent to the villages?"

"You heard old Shatresh—the fellow with the pornographic sculpture and the yellow robe. These young twerps act like fools, and sensible people don't pay any attention to fools. What's more, they've been sent out indoctrinated with the idea that shoonoon are a lot of lying old fakes, and the shoonoon resent that. You know, they're not lying old fakes. Within their limitations, they are honest and ethical professional people."

"Oh, come, now! I know, I think they're sort of wonderful, but let's don't give them too much credit."

"I'm not. You're doing that."

"*Huh?*" She looked at him in amazement. "Me?"

"Yes, you. You know better than to believe in magic, so you expect them to know better, too. Well, they don't. You know that under the macroscopic world-of-the senses there exists a complex of biological, chemical and physical phenomena down to the subnucleonic level. They realize that there must be something beyond what they can see and handle, but they think it's magic. Well, as a race, so did we until only a few centuries pre-atomic. These people are still lower Neolithic, a hunting people who have just learned agriculture. Where we were

twenty thousand years ago.

"You think any glib-talking Kwann can hang a lot of rags, bones and old iron onto himself, go through some impromptu mummery, and set up as shoonoo? Well, he can't. The shoonoon are a hereditary caste. A shoonoo father will begin teaching his son as soon as he can walk and talk, and he keeps on teaching him till he's the age-equivalent of a graduate M.D. or a science Ph. D."

"Well, what all is there to learn—?"

"The theoretical basis and practical applications of sympathetic magic. Action-at-a-distance by one object upon another. Homeopathic magic: the principle that things which resemble one another will interact. For instance, there's an animal the natives call a shynph. It has an excrescence of horn on its brow like an arrowhead, and it arches its back like a bow when it jumps. Therefore, a shynph is equal to a bow and arrow, and for that reason the Kwanns made their bowstrings out of shynph-gut. Now they use tensilon because it won't break as easily or get wet and stretch. So they have to turn the tensilon into shynph-gut. They used to do that by drawing a picture of a shynph on the spool, and then the traders began labeling the spools with pictures of shynph. I think my father was one of the first to do that.

"Then, there's contagious magic. Anything that's been part of anything else or come in contact with it will interact permanently with it. I wish I had a sol for every time I've seen a Kwann pull the wad out of a shot-shell, pick up a pinch of dirt from the footprint of some animal he's tracking, put it in among the buckshot, and then crimp the wad in again.

"Everything a Kwann does has some sort of magical implications. It's the shoonoo's business to know all this; to be able to tell just what magical influences have to be produced, and what influences must be avoided. And there are circumstances in which magic simply will not work, even in theory. The reason is that there is some powerful counter-influence at work. He has to know when he can't use magic, and he has to be able to explain why. And when he's theoretically able to do something by magic, he has to have a plausible explanation why it won't produce results—just as any highly civilized and ethical Terran M.D. has to be able to explain his failures to the satisfaction of his late patient's relatives. Only a shoonoo doesn't get sued for malpractice; he gets a spear stuck in him. Under those circumstances, a caste of hereditary magicians is literally bred for quick thinking. These old gaffers we have aboard are the intellectual top crust among the natives. Any of them can think rings around your Government school products. As for preying on the ignorance and credulity of the other natives, they're only infinitesimally less ignorant and credulous themselves. But they want to learn—from anybody who can gain their respect by respecting them."

Edith Shaw didn't say anything in reply. She was thoughtful during the rest of

the meal, and when they were back on the observation deck he noticed that she seemed to be looking at the shoonoon with new eyes.

In the screen-views of Bluelake, Beta had already set, and the sky was fading; stars had begun to twinkle. There were more fires—one, close to the city in the east, a regular conflagration—and fighting had broken out in the native city itself. He was wishing now, that he hadn't thought it necessary to use those screens. The shoonoon were noticing what was going on in them, and talking among themselves. Travis, after one look at the situation, hurried back to the bridge to make a screen-call. After a while, he returned, almost crackling with suppressed excitement.

"Well, it's finally happened! Maith's forced Kovac to declare martial rule!" he said in an exultant undertone.

"Forced him?" Edith was puzzled. "The Army can't force the Civil Government—"

"He threatened to do it himself. Intervene and suspend civil rule."

"But I thought only the Navy could do that."

"Any planetary commander of Armed Forces can, in a state of extreme emergency. I think you'll both agree that this emergency is about as extreme as they come. Kovac knew that Maith was unwilling to do it—he'd have to stand court-martial to justify his action—but he also knew that a governor general who has his Colony taken away from him by the Armed Forces never gets it back; he's finished. So it was just a case of the weaker man in the weaker position yielding."

"Where does this put us?"

"We are a civilian scientific project. You are under orders of General Maith. I am under your orders. I don't know about Edith."

"Can I draft her, or do I have to get you to get General Maith to do it?"

"Listen, don't do that," Edith protested. "I still have to work for Government House, and this martial rule won't last forever. They'll all be prejudiced against me—"

"You can shove your Government job on the air lock," Miles told her. "You'll have a better one with Planetwide News, at half again as much pay. And after the shakeup at Government House, about a year from now, you may be going back as director of EETA. When they find out on Terra just how badly this Government has been mismanaging things there'll be a lot of vacancies."

The shoonoon had been watching the fighting in the viewscreens. Then somebody noticed that the spot of light on the navigational globe was approaching a coastline, and they all rushed forward for a look.

Travis and Edith slept for a while; when they returned to relieve him, Alpha was rising to the east of Bluelake, and the fighting in the city was still going on.

The shoonoon were still wakeful and interested; Kwanns could go without sleep for much longer periods than Terrans. The lack of any fixed cycle of daylight and darkness on their planet had left them unconditioned to any regular sleeping-and-waking rhythm.

"I just called in," Travis said. "Things aren't good, at all. Most of the natives in the evacuee cantonments have gotten into the native city, now, and they've gotten hold of a lot of firearms somehow. And they're getting nasty in the west, beyond where Gonzales is occupying, and in the northeast, and we only have about half enough troops to cope with everything. The general wants to know how you're making out with the shoonoon."

"I'll call him before I get in the sack."

He went up on the bridge and made the call. General Maith looked as sleepy as he felt; they both yawned as they greeted each other. There wasn't much he could tell the general, and it sounded like the glib reassurances one gets from a hospital about a friend's condition.

"We'll check in with you as soon as we get back and get our shoonoon put away. We understand what's motivating these frenzies, now, and in about twenty-five to thirty hours we'll be able to start doing something about it."

The general, in the screen, grimaced.

"That's a long time, Mr. Gilbert. Longer than we can afford to take, I'm afraid. You're not cruising at full speed now, are you?"

"Oh, no, general. We're just trying to keep Alpha level on the horizon." He thought for a moment. "We don't need to keep down to that. It may make an even bigger impression if we speed up."

He went back to the observation deck, picked up the PA-phone, and called for attention.

"You have seen, now, that we can travel around the world, so fast that we keep up with the Sky Fire and it is not seen to set. Now we will travel even faster, and I will show you a new wonder. I will show you the Sky Fire rising in the west; it and the Always-Same will seem to go backward in the sky. This will not be for real; it will only be seen so because we will be traveling faster. Watch, now, and see." He called the bridge for full speed, and then told them to look at the Sky-Fire and then see in the screens where it stood over Bluelake.

That was even better; now they were racing with the Sky-Fire and catching up to it. After half an hour he left them still excited and whooping gleefully over the steady gain. Five hours later, when he came back after a nap and a hasty breakfast, they were still whooping. Edith Shaw was excited, too; the shoonoon were trying to estimate how soon they would be back to Bluelake by comparing the position of the Sky Fire with its position in the screen.

General Maith received them in his private office at Army HQ; Foxx Travis

mixed drinks for the four of them while the general checked the microphones to make sure they had privacy.

"I blame myself for not having forced martial rule on them hundreds of hours ago," he said. "I have three brigades; the one General Gonzales had here originally, and the two I brought with me when I took over here. We have to keep at least half a brigade in the south, to keep the tribes there from starting any more forest fires. I can't hold Bluelake with anything less than half a brigade. Gonzales has his hands full in his area. He had a nasty business while you were off on that world cruise—natives in one village caught the men stationed there off guard and wiped them out, and then started another frenzy. It spread to two other villages before he got it stopped. And we need the Third Brigade in the northeast; there are three quarters of a million natives up there, inhabiting close to a million square miles. And if anything really breaks loose here, and what's been going on in the last few days is nothing even approaching what a real outbreak could be like, we'll have to pull in troops from everywhere. We must save the Terran-type crops and the carniculture plants. If we don't, we all starve."

Miles nodded. There wasn't anything he could think of saying to that.

"How soon can you begin to show results with those shoonoon, Mr. Gilbert?" the general asked. "You said from twenty-five to thirty hours. Can you cut that any? In twenty-five hours, all hell could be loose all over the continent."

Miles shook his head. "So far, I haven't accomplished anything positive," he said. "All I did with this trip around the world was convince them that I was telling the truth when I told them there was no Dark Place under the World, where Alpha and Beta go at night." He hastened, as the general began swearing, to add: "I know, that doesn't sound like much. But it was necessary. I have to convince them that there will be no Last Hot Time, and then—"

The shoonoon, on their drum-shaped cushions, stared at him in silence, aghast. All the happiness over the wonderful trip in the ship, when they had chased the Sky Fire around the World and caught it over Bluelake, and even their pleasure in the frozen delicacies they had just eaten, was gone.

"*No—Last—Hot—Time*?"

"Mailsh Heelbare, this is not real! It cannot be!"

"The Gone Ones—"

"The Always-Cool Time, when there will be no more hunger or hard work or death; it cannot be real that this will never come!"

He rose, holding up his hands; his action stopped the clamor.

"Why should the Gone Ones want to return to this poor world that they have gladly left?" he asked. "Have they not a better place in the middle of the Sky Fire, where it is always cool? And why should you want them to come back to this world? Will not each one of you pass, sooner or later, to the middle of the Sky Fire; will

you not there be given new bodies and join the Gone Ones? There is the Always-Cool; there the crops grow without planting and without the work of women; there the game come into the villages to be killed in the gathering-places, without hunting. There you will talk with the other Gone Ones, your fathers and your fathers' fathers, as I talk with you. Why do you think this must come to the World of People? Can you not wait to join the Gone Ones in the Sky Fire?''

Then he sat down and folded his arms. They were looking at him in amazement; evidently they all saw the logic, but none of them had ever thought of it before. Now they would have to turn it over in their minds and accustom themselves to the new viewpoint. They began whooshing among themselves. At length, old Shatresh, who had seen the Hot Time before, spoke:

''Mailsh Heelbare, we trust you,'' he said. ''You have told us of wonders, and you have shown us that they were real. But do you know this for real?''

''Do you tell me that you do not?'' he demanded in surprise. ''You have had fathers, and fathers' fathers. They have gone to join the Gone Ones. Why should you not, also? And why should the Gone Ones come back and destroy the World of People? Then your children will have no more children, and your children's children will never be. It is in the World of People that the People are born; it is in the World that they grow and gain wisdom to fit themselves to live in the Place of the Gone Ones when they are through with the bodies they use in the World. You should be happy that there will be no Last Hot Time, and that the line of your begettings will go on and not be cut short.''

There were murmurs of agreement with this. Most of them were beginning to be relieved that there wouldn't be a Last Hot Time, after all. Then one of the class asked:

''Do the Terrans also go to the Place of the Gone Ones, or have they a place of their own?''

He was silent for a long time, looking down at the floor. Then he raised his head.

''I had hoped that I would not have to speak of this,'' he said. ''But, since you have asked, it is right that I should tell you.'' He hesitated again, until the Kwanns in front of him had begun to fidget. Then he asked old Shatresh: ''Speak of the beliefs of the People about how the World was made.''

''The great Spirit made the world.'' He held up his carven obscenity. ''He made the World out of himself. This is a make-like to show it.''

''The Great Spirit made many worlds. The stars which you see in dark-time are all worlds, each with many smaller worlds around it. The Great Spirit made them all at one time, and made people on many of them. The Great Spirit made the World of People, and made the Always-Same and the Sky Fire, and inside the Sky Fire he made the Place of the Gone Ones. And when he made the Place of the

Gone Ones, he put an Oomphel-Mother inside it, to bring forth oomphel.''

This created a brief sensation. An Oomphel-Mother was something they had never thought of before, but now they were wondering why they hadn't. Of course there'd be an Oomphel-Mother; how else would there be oomphel?

''The World of the Terrans is far away from the World of People, as we have always told you. When the Great Spirit made it He gave it only an Always-Same, and no Sky Fire. Since there was no Sky Fire, there was no place to put a Place of the Gone Ones, so the Great Spirit made the Terrans so that they would not die, but live forever in their own bodies. The Oomphel-Mother for the World of the Terrans the Great Spirit hid in a cave under a great mountain.

''The Terrans whom the Great Spirit made lived for a long time, and then, one day, a man and a woman found a crack in a rock, and went inside, and they found the cave of the Oomphel-Mother, and the Oomphel-Mother in it. So they called all the other Terrans, and they brought the Oomphel-Mother out, and the Oomphel-Mother began to bring forth Oomphel. The Oomphel-Mother brought forth metal, and cloth, and glass, and plastic; knives, and axes and guns and clothing—'' He went on, cataloguing the products of human technology, the shoonoon staring more and more wide-eyed at him. ''And oomphel to make oomphel, and oomphel to teach wisdom,'' he finished. ''They became very wise and very rich.

''Then the Great Spirit saw what the Terrans had done, and became angry, for it was not meant for the Terrans to do this, and the Great Spirit cursed the Terrans with a curse of death. It was not death as you know it. Because the Terrans had sinned by laying hands on the Oomphel-Mother, not only their bodies must die, but their spirits also. A Terran has a short life in the body, after that no life.''

''This, then, is the Oomphel Secret. The last skin of the fooshkoot has been peeled away; behold the bitter nut, upon which we Terrans have chewed for more time than anybody can count. Happy people! When you die or are slain, you go to the Place of the Gone Ones, to join your fathers and your fathers' fathers and to await your children and children's children. When we die or are slain, that is the end of us.''

''But you have brought your oomphel into this world; have you not brought the curse with it?'' somebody asked, frightened.

''No. The People did not sin against the Great Spirit; they have not laid hands on an Oomphel-Mother as we did. The oomphel we bring you will do no harm; do you think we would be so wicked as to bring the curse upon you? It will be good for you to learn about oomphel here; in your Place of the Gone Ones there is much oomphel.''

''Why did your people come to this world, Mailsh Heelbare?'' old Shatresh asked. ''Was it to try to hide from the curse?''

''There is no hiding from the curse of the Great Spirit, but we Terrans are not

a people who submit without strife to any fate. From the time of the Curse of Death on, we have been trying to make spirits for ourselves."

"But how can you do that?"

"We do not know. The oomphel will not teach us that, though it teaches everything else. We have only learned many ways in which it cannot be done. It cannot be done with oomphel, or with anything that is in our own world. But the Oomphel-Mother made us ships to go to other worlds, and we have gone to many of them, this one among them, seeking things from which we try to make spirits. We are trying to make spirits for ourselves from the crystals that grow in the klooba plants; we may fail with them, too. But I say this; I may die, and all the other Terrans now living may die, and be as though they had never been, but someday we will not fail. Someday our children, or our children's children, will make spirits for themselves and live forever, as you do."

"Why were we not told this before, Mailsh Heelbare?"

"We were ashamed to have you know it. We are ashamed to be people without spirits."

"Can we help you and your people? Maybe our magic might help."

"It well might. It would be worth trying. But first, you must help yourselves. You and your people are sinning against the Great Spirit as grievously as did the Terrans of old. Be warned in time, lest you answer it as grievously."

"What do you mean, Mailsh Heelbare?" Old Shatresh was frightened.

"You are making magic to bring the Sky Fire to the World. Do you know what will happen? The World of People will pass whole into the place of the Gone Ones, and both will be destroyed. The World of People is a world of death; everything that lives on it must die. The Place of the Gone Ones is a world of life; everything in it lives forever. The two will strive against each other, and will destroy one another, and there will be nothing in the Sky Fire or the World but fire. This is wisdom which our oomphel teaches us. We know this secret, and with it we make weapons of great destruction." He looked over the seated shoonoon, picking out those who wore the flame-colored cloaks of the fire-dance. "You—and you—and you," he said. "You have been making this dreadful magic, and leading your people in it. And which among the rest of you have not been guilty?"

"We did not know," one of them said. "Mailsh Heelbare, have we yet time to keep this from happening?"

"Yes. There is only a little time, but there is time. You have until the Always-Same passes across the face of the Sky-Fire." That would be seven hundred and fifty hours. "If this happens, all is safe. If the Sky Fire blots Out the Always Same, we are all lost together. You must go among your people and tell them what madness they are doing, and command them to stop. You must command them to lay down their arms and cease fighting. And you must tell them of the awful curse that

was put upon the Terrans in the long-ago time, for a lesser sin than they are now committing."

"If we say that Mailsh Heelbare told us this, the people may not believe us. He is not known to all, and some would take no Terran's word, not even his."

"Would anybody tell a secret of this sort, about his own people, if it were not real?"

"We had better say nothing about Mailsh Heelbare. We will say that the Gone Ones told us in dreams."

"Let us say that the Great Spirit sent a dream of warning to each of us," another shoonoo said. "There has been too much talk about dreams from the Gone Ones already."

"But the Great Spirit has never sent a dream—"

"Nothing like this has ever happened before, either."

He rose, and they were silent. "Go to your living-place, now," he told them. "Talk of how best you may warn your people." He pointed to the clock. "You have an oomphel like that in your living-place; when the shorter spear has moved three places, I will speak with you again, and then you will be sent in air cars to your people to speak to them."

They went up the escalator and down the hall to Miles' office on the third floor without talking. Foxx Travis was singing softly, almost inaudibly:

"*You will eeeeat ... in the sweeeet ... bye-and-bye, You'll get oooom ... phel in the sky ... when you die!*"

Inside, Edith Shaw slumped dispiritedly in a chair. Foxx Travis went to the coffee-maker and started it. Miles snapped on the communication screen and punched the combination of General Maith's headquarters. As soon as the uniformed girl who appeared in it saw him, her hands moved quickly; the screen flickered, and the general appeared in it.

"We have it made, general. They're sold; we're ready to start them out in three hours."

Maith's thin, weary face suddenly lighted. "You mean they are going to co-operate?"

He shook his head. "They think they're saving the world; they think we're co-operating with them."

The general laughed. "That's even better! How do you want them sent out?"

"The ones in the Bluelake area first. Better have some picked K.N.I. in native costume, with pistols, to go with them. They'll need protection, till they're able to get a hearing for themselves. After they're all out, the ones from Gonzales' area can be started." He thought for a moment. "I'll want four or five of them left here to help me when you start bringing more shoonoon in from other areas. How soon

do you think you'll have another class for me?"

"Two or three days, if everything goes all right. We have the villages and plantations in the south under pretty tight control now; we can start gathering them up right away. As soon as we get things stabilized here, we can send reinforcements to the north. We'll have transport for you in three hours."

The general blanked out. He turned from the screen. Travis was laughing happily.

"Miles, did anybody ever tell you you were a genius?" he asked. "That last jolt you gave them was perfect. Why didn't you tell us about it in advance?"

"I didn't know about it in advance; I didn't think of it till I'd started talking to them. No cream or sugar for me."

"Cream," Edith said, lifelessly. "Why did you do it? Why didn't you just tell them the truth?"

Travis asked her to define the term. She started to say something bitter about Jesting Pilate. Miles interrupted.

"In spite of Lord Beacon, Pilate wasn't jesting," he said. "And he didn't stay for an answer because he knew he'd die of old age waiting for one. What kind of truth should I have told them?"

"Why, what you started to tell them. That Beta moves in a fixed orbit and can't get any closer to Alpha—"

"There's been some work done on the question since Pilate's time," Travis said. "My semantics prof at Command College had the start of an answer. He defined truth as a statement having a practical correspondence with reality on the physical levels of structure and observation and the verbal order of abstraction under consideration."

"He defined truth as a statement. A statement exists only in the mind of the person making it, and the mind of the person to whom it is made. If the person to whom it is made can't understand or accept it, it isn't the truth."

"They understood when you showed them that the planet is round, and they understood that tri-dimensional model of the system. Why didn't you let it go at that?"

"They accepted it intellectually. But when I told them that there wasn't any chance of Kwannon getting any closer to Alpha, they rebelled emotionally. It doesn't matter how conclusively you prove anything, if the person to whom you prove it can't accept your proof emotionally, it's still false. Not-real."

"They had all their emotional capital invested in this Always-Cool Time," Travis told her. "They couldn't let Miles wipe that out for them. So he shifted it from this world to the next, and convinced them that they were getting a better deal that way. You saw how quickly they picked it up. And he didn't have the sin of

telling children there is no Easter Bunny on his conscience, either.''

''But why did you tell them that story about the Oomphel Mother?'' she insisted. ''Now they'll go out and tell all the other natives, and they'll believe it.''

''Would they have believed it if I'd told them about Terran scientific technology? Your people have been doing that for close to half a century. You see what impression it's made.''

''But you told them—You told them that Terrans have no souls!''

''Can you prove that was a lie?'' Travis asked. ''Let's see yours. Draw—*soul*! Inspection—*soul*!''

Naturally. Foxx Travis would expect a soul to be carried in a holster.

''But they'll look down on us, now. They'll say we're just like animals,'' Edith almost wailed.

''Now it comes out,'' Travis said. ''We won't be the lordly Terrans, any more, helping the poor benighted Kwanns out of the goodness of our hearts, scattering largess, bearing the Terran's Burden—new model, a give-away instead of a gun. Now *they'll* pity *us*; they'll think *we're* inferior beings.''

''I don't think the natives are inferior beings!'' She was almost in tears.

''If you don't, why did you come all the way to Kwannon to try to make them more like Terrans?''

''Knock it off, Foxx; stop heckling her.'' Travis looked faintly surprised. Maybe he hadn't realized, before, that a boss newsman learns to talk like a commanding officer. ''You remember what Ramon Gonzales was saying, out at Sanders', about the inferior's hatred for the superior as superior? It's no wonder these Kwanns resent us. They have a right to; we've done them all an unforgivable injury. We've let them see us doing things they can't do. Of course they resent us. But now I've given them something to feel superior about. When they die, they'll go to the Place of the Gone Ones, and have oomphel in the sky, and they will live forever in new bodies, but when we die, we just die, period. So they'll pity us and politely try to hide their condescension toward us.

''And because they feel superior to us, they'll want to help us. They'll work hard on the plantations, so that we can have plenty of biocrystals, and their shoonoon will work magic for us, to help us poor benighted Terrans to grow souls for ourselves, so that we can almost be like them. Of course, they'll have a chance to exploit us, and get oomphel from us, too, but the important thing will be to help the poor Terrans. Maybe they'll even organize a Spiritual and Magical Assistance Agency.''

OPERATION LORELIE

It was a new time and a vast new war of complete and awful annihilation. Yet, some things never change, and, as in ancient times, Ulysses walked again—brave and unconquerable—and again, the sirens wove their deadly spell with a smile and a song.

They came like monsters, rather than men, into the vast ruin of what had once been a great city. They walked carefully, side by side, speaking to each other by radio as though they were in deep space rather than upon solid ground.

The winding way they followed through the ruins was marked by blurred footsteps in the dust and the two men, clumsy in their bulky suits, found the going difficult.

They stopped, and one of them held out an instrument. He studied the dial. "All clear," and both men removed their helmets. They wiped sweat from their faces and glanced at each other.

The blonde man said, "The air's okay, Jarvis. Everything seems all right. I don't get it."

Jarvis, his dark eyes wary, scowled as he looked about. "It seems all right. But we know it isn't. It can't be."

"I'm shucking this suit."

"Don't be a fool, Mark!"

"But the dial read clear, man! And we know nobody is going to shoot us. All life had to be wiped out."

"How about minor power installations?"

Jarvis took a chocolate bar from his pocket, sat down on a piece of broken rubble and began to eat. "You're too careless—far too careless, Mark."

Mark laughed. "You've always been cautious enough for both of us. Got me out of plenty of scrapes back in school, too. Don't think I've forgotten." Affection warmed his blue eyes as they rested on the face of his friend.

"Okay! Okay! But what happened to them? Where did they go?" Jarvis took

nervous bites from his second chocolate bar. Then he, too, peeled off his suit. He sniffed the air distrustfully, as he wiggled his shoulders to free them from the clinging, damp shirt. Then he took a few experimental steps forward.

"Seems all right, Mark. But how do you explain about Hank and Garland? Never were two more careful guys."

"Probably a simple miscalculation. Or an accident. We know it couldn't have been enemy action. Tests prove conclusively that we wiped them out—to a man." He took deep gulps of air into his lungs, and stretched like a cat. "We'll find out soon enough. Boy, I feel great!"

They deflated and folded their safety suits and added the bundles to the other equipment on their backs. Then, with their instruments held before them, they probed their way into the twisted wreckage, still following the faint, dust-filled footprints.

Bent and rusted girders rose on all sides like the bones of prehistoric monsters. Nothing stirred. The dust lay ages-thick on everything.

"Gives you the spooks, doesn't it?" Jarvis was still tense, poised to respond to the first signal of danger. "Feels like we're the last men alive!"

"Funny about Hank and Garland. There's nothing here to harm anyone."

Jarvis looked at his watch. "Better contact HQ for instructions."

The two stepped off the path, into the shade of a grotesque chunk of broken masonry. Mark set up the radio and twirled the dials. "Team Four, calling HQ. Team Four, reporting!"

"HQ here." The voice from the radio blared loud in the stillness. "Give your report, Team Four."

"Looks like nothing's moved here in a thousand years. Safe as a baby's dream. Rock-solid, air morning-pure. But—" He hesitated, trying not to sound like a scared school boy. "No sign of Team Three. Or of Teams One and Two, either. Over."

"Look here, Team Four. It's your job to find out. The earth didn't just swallow them. Final report from each team placed them well within the city. It's been ten days since the last contact. Probe every inch of the place."

"Right!"

"But be careful. We can't afford to lose any more men! Roger!"

"Roger!"

There was only one way now—ahead. It lay clearly marked. The dim footsteps never strayed or faltered. Three hours of search revealed no pitfalls, no dangers, and no trace of the missing men. Then night was upon them and they bedded down gratefully.

"Strange, isn't it? The war over. The invaders blasted from the earth. All peril gone. And yet—men disappear."

Jarvis stared at the ruins around them. "I can't take much more, Mark. Twelve years of war is enough. Are we never to have a life—have our home and women back, and—peace?"

"Sure, it's been tough. But think of the women and children isolated on that sub-satellite. It's tougher for them—just waiting." Stretched on his back, Mark stared at the cloudless, evening sky. "But pretty soon we'll get this planet cleaned up and bring them in. Christ! Four years without even seeing a woman. I remember the last time—"

"Okay!" Jarvis interrupted impatiently. "Let's get to sleep."

"Sure, pal. Goodnight."

They fell asleep to dream of green hills, corn ripening, apples roasting over an open fire. Peace, and home, and girls, their firm legs flashing in the sun.

Soldierlike, Mark was suddenly awake. He lay without motion, sensitive to some subtle change in the surroundings. From the corner of his eye he could see Jarvis wrapped in sleep. The silence seemed eternal.

Then, whisper-soft, came a murmur, a sound, a voice. A girl's voice, sighing and singing, from deep in that devastated spot.

A woman!

Instantly, Mark was on his feet. No need to wake Jarvis. Plenty of time for Jarvis to find out—afterwards. But not yet! A miracle that a girl had survived in all that wreckage. But a miracle he wanted to savour alone!

Ahead, the path turned and Mark followed it as it went forward again, downhill, between the massed walls of rubble. Now the voice swelled, a melancholy song. Well, she won't be melancholy for long, Mark thought. Her solitary ordeal was over.

"Mark!" Jarvis stood on an upturned lintel, ten feet above Mark's head. As Mark jerked to a stop at the cry, Jarvis jumped into his path. "You fool! Don't you know it's a trap?"

"So that's how you want to play it? The noble friend, protecting me from myself!" He slammed a fist into the side of Jarvis' head. "Well, I won't bite! She's mine! I found her!"

In silence, in the narrow passage between the rocks, the two fought. Suddenly, above the sound of fist on flesh, came the voice of the girl again, clear, young. "She is there," thought Jarvis. He could almost taste her lips on his. The sensation came as a shock. How did he know? He'd never had a woman. That's what came from listening to the tales of Mark's exploits with women. Now he had to have that girl!

The mounting tension of the fighting snapped something in Jarvis' seething mind. Danger, friendship, duty, all meant nothing. Only one thing mattered. The

girl! Mark had had more than his share of girls. He, Jarvis, was the one who should have her! He'd been deprived of his manhood long enough! His frenzied brain hunted a trick to gain his ends.

Mark's superior strength began to force Jarvis to give ground. Then a final blow sent him reeling, he reached out to break his fall, his hand closed on a rock. He threw it. Mark crashed to the ground, his knee smashed, his leg useless. Then the tomb stillness of the dead city took over. The dust settled slowly. Mark came to his feet.

Jarvis was gone.

Dragging his useless leg, Mark forced himself to crawl forward. Jarvis had to be stopped.

Ahead, a shadow moved, and for a moment the moon threw the silhouette of a man against a cavernous opening in the debris.

"Jarvis!"

An electric flash shattered the darkness. The jagged teeth of the bolt spit tongues of fire. Cordite mingled with the raw, nauseant, revolting smell of scorched flesh and hair. The figure tottered and fell into the black mouth of the cave. Then, as the flame faded, it lit up small bundles of charred bones near the fallen body.

There was a whir and a click of a mechanism. Fifteen feet away, Mark watched as the arm of a phonograph rose, moved slowly back to the starting point. Then the record began once more to grind out its death-trap melody.

OPERATION R.S.V.P.

Vladmir N. Dzhoubinsky, Foreign Minister, Union of East European Soviet Republics, to Wu Fung Tung, Foreign Minister, United Peoples' Republics of East Asia:

15 Jan. 1984

Honored Sir:

Pursuant to our well known policy of exchanging military and scientific information with the Government, of friendly Powers, my Government takes great pleasure in announcing the completely successful final tests of our new nuclear-rocket guided missile *Marxist Victory*. The test launching was made from a position south of Lake Balkash; the target was located in the East Siberian Sea.

In order to assist you in appreciating the range of the new guided missile *Marxist Victory*, let me point out that the distance from launching-site to target is somewhat over 50 percent greater than the distance from launching-site to your capital, Nanking.

My Government is still hopeful that your Government will revise its present intransigeant position on the Khakum River dispute.

I have the honor, etc., etc., etc.,

V. N. Dzhoubinsky

Wu Fung Tung, to Vladmir N. Dzhoubinsky:

7 Feb., 1984

Estimable Sir:

My Government was most delighted to learn of the splendid triumph of your Government in developing the new guided missile *Marxist Victory*, and at the same time deeply relieved. We had, of course, detected the release of nuclear energy incident to the test, and inasmuch as it had obviously originated in the disintegration of a quantity of Uranium 235, we had feared that an explosion had occurred at your Government's secret uranium plant at Khatanga. We have long known of the lax security measures in effect at this plant, and have, as a consequence, been expecting some disaster there.

I am therefore sure that your Government will be equally gratified to learn of the perfection, by my Government, of our own new guided missile *Celestial Destroyer*, which embodies, in greatly improved form, many of the features of your own Government's guided missile *Marxist Victory*. Naturally, your own scientific warfare specialists have detected the release of energy incident to the explosion of our own improved thorium-hafnium interaction bomb; this bomb was exploded over the North Polar ice cap, about two hundred miles south of the Pole, on about 35 degrees East Longitude, almost due north of your capital city of Moscow. The launching was made from a site in Thibet.

Naturally, my Government cannot deviate from our present just and reasonable attitude in the Khakum River question. Trusting that your Government will realize this, I have the honor to be,

Your obedient and respectful servant,

Wu Fung Tung

From N. Y. TIMES, Feb. 20, 1984:

AFGHAN RULER FETED AT NANKING

Ameer Shere Ali Abdallah Confers

With

UPREA Pres. Sung Li-Yin

UEESR Foreign Minister Dzhoubinsky to Maxim G. Krylenkoff, Ambassador at Nanking:

3 March, 1984

Comrade Ambassador:

It is desired that you make immediate secret and confidential repeat secret and confidential inquiry as to the whereabouts of Dr. Dimitri O. Voronoff, the noted Soviet rocket expert, designer of the new guided missile *Marxist Victory*, who vanished a week ago from the Josef Vissarionovitch Djugashvli Reaction-Propulsion Laboratories at Molotovgorod. It is feared in Government circles that this noted scientist has been abducted by agents of the United Peoples' Republics of East Asia, possibly to extract from him, under torture, information of a secret technical nature.

As you know, this is but the latest of a series of such disappearances, beginning about five years ago, when the Khakum River question first arose.

Your utmost activity in this matter is required.

Dzhoubinsky

Ambassador Krylenkoff to Foreign Minister Dzhoubinsky:

9 March, 1984

Comrade Foreign Minister:

Since receipt of yours of 3/3/'84, I have been utilizing all resources at my disposal in the matter of the noted scientist D. O. Voronoff, and availing myself of all sources of information, e.g., spies, secret agents, disaffected elements of the local population, and including two UPREA Cabinet Ministers on my payroll. I regret to report that results of this investigation have been entirely negative. No one here appears to know anything of the whereabouts of Dr. Voronoff.

At the same time, there is considerable concern in UPREA Government circles over the disappearances of certain prominent East Asian scientists, e.g.. Dr. Hong Foo, the nuclear physicist; Dr. Hin Yang-Woo, the great theoretical mathematician; Dr. Mong Shing, the electronics expert. I am informed that UPREA Government sources are attributing these disappearances to us.

I can only say that I am sincerely sorry that this is not the case.

Krylenkoff

Wu Fung Tung to Vladmir N. Dzhoubinsky:

21 April, 1984

Estimable Sir:

In accordance with our established policy of free exchange with friendly Powers of scientific information, permit me to inform your Government that a new mutated disease-virus has been developed in our biological laboratories, causing a highly contagious disease similar in symptoms to bubonic plague, but responding to none of the treatments for this latter disease. This new virus strain was accidentally produced in the course of some experiments with radioactivity.

In spite of the greatest care, it is feared that this virus has spread beyond the laboratory in which it was developed. We warn you most urgently of the danger that it may have spread to the UEESR; enclosed are a list of symptoms, etc.

My Government instructs me to advise your Government that the attitude of your Government in the Khakum River question is utterly unacceptable, and will require considerable revision before my Government can even consider negotiation with your Government on the subject. Your obedient and respectful servant,

Wu Fung Tung

From N. Y. Times, May 12, 1984:

AFGHAN RULER FETED AT MOSCOW

Ameer sees Red Square Troop Review;

Confers with Premier-President Mouzorgin

Sing Yat, UPREA Ambassador at Moscow, to Wu Fung Tung:

26 June, 1984

Venerable and Honored Sir:

I regret humbly that I can learn nothing whatever about the fate of the learned

scholars of science of whom you inquire, namely: Hong Foo, Hin Yang-Woo, Mong Shing, Yee Ho Li, Wong Fat, and Bao Hu-Shin. This inability may be in part due to incompetence of my unworthy self, but none of my many sources of information, including Soviet Minister of Police Morgodoff, who is on my payroll, can furnish any useful data whatever. I am informed, however, that the UEESR Government is deeply concerned about similar disappearances of some of the foremost of their own scientists, including Voronoff, Jirnikov, Kagorinoff, Bakhorin, Himmelfarber and Pavlovinsky, all of whose dossiers are on file with our Bureau of Foreign Intelligence. I am further informed that the Government of the UEESR ascribes these disappearances to our own activities.

Ah, Venerable and Honored Sir, if this were only true!

Kindly condescend to accept compliments of,

Sing Yat

Dzhoubinsky to Wu Fung Tung:

6 October, 1984

Honored Sir:

Pursuant to our well known policy of exchanging scientific information with the Governments of friendly Powers, my Government takes the greatest pleasure in announcing a scientific discovery of inestimable value to the entire world. I refer to nothing less than a positive technique for liquidating rats as a species.

This technique involves treatment of male rats with certain types of hard radiations, which not only renders them reproductively sterile but leaves the rodents so treated in full possession of all other sexual functions and impulses. Furthermore, this condition of sterility is venereally contagious, so that one male rat so treated will sterilize all female rats with which it comes in contact, and these, in turn, will sterilize all male rats coming in contact with them. Our mathematicians estimate that under even moderately favorable circumstances, the entire rat population of the world could be sterilized from one male rat in approximately two hundred years.

Rats so treated have already been liberated in the granaries at Odessa; in three months, rat-trappings there have fallen by 26.4 percent, and grain-losses to rats by 32.09 percent.

We are shipping you six dozen sterilized male rats, which you can use for sterilization stock, and, by so augmenting their numbers, may duplicate our own successes.

Curiously enough, this effect of venereally contagious sterility was discovered quite accidentally, in connection with the use of hard radiations for human sterilization (criminals, mental defectives, etc.). Knowing the disastrous possible effects of an epidemic of contagious human sterility, all persons so sterilized were liquidated as soon as the contagious nature of their sterility had been discovered,

with the exception of a dozen or so convicts, who had been released before this discovery was made. It is believed that at least some of them have made their way over the border and into the territory of the United Peoples' Republics of East Asia. I must caution your Government to be on the lookout of them. Among a people still practicing ancestor-worship, an epidemic of sterility would be a disaster indeed.

My Government must insist that your Government take some definite step toward the solution of the Khakum River question; the present position of the Government of the United Peoples' Republics of East Asia on this subject is utterly unacceptable to the Government of the Union of East European Soviet Republics, and must be revised very considerably.

I have the honor, etc., etc.,

Vladmir N. Dzhoubinsky

Coded radiogram, Dzhoubinsky to Krylenkoff:

25 OCTOBER, 1984

ASCERTAIN IMMEDIATELY CAUSE OF RELEASE OF NUCLEAR ENERGY VICINITY OF NOVA ZEMBLA THIS AM

DZHOUBINSKY

Coded radiogram, Wu Fung Tung to Sing Yat:

25 OCTOBER, 1984

ASCERTAIN IMMEDIATELY CAUSE OF RELEASE OF NUCLEAR ENERGY VICINITY OF NOVA ZEMBLA THIS AM

WU

Letter from the Ameer of Afghanistan to UEESR Premier-President Mouzorgin and UPREA President Sung Li-Yin:

26 October, 1984

SHERE ALI ABDALLAH, Ameer of Afghanistan, Master of Kabul, Lord of Herat and Kandahar, Keeper of Khyber Pass, Defender of the True Faith, Servant of the Most High and Sword-Hand of the Prophet; Ph.D. (Princeton); Sc.B. (Massachusetts Institute of Technology); M.A. (Oxford): to their Excellencies A.A. Mouzorgin, Premier-President of the Union of East European Soviet Republics, and Sung Li-Yin, President of the United Peoples' Republics of East Asia,

Greetings, in the name of Allah!

For the past five years, I have watched, with growing concern, the increasing tensions between your Excellencies' respective Governments, allegedly arising out of the so-called Khakum River question. It is my conviction that this Khakum River dispute is the utterly fraudulent device by which both Governments hope to create a pretext for the invasion of India, each ostensibly to rescue that unhappy country from the rapacity of the other. Your Excellencies must surely realize that

this is a contingency which the Government of the Kingdom of Afghanistan cannot and will not permit; it would mean nothing short of the national extinction of the Kingdom of Afghanistan, and the enslavement of the Afghan people.

Your Excellencies will recall that I discussed this matter most urgently on the occasions of my visits to your respective capitals of Moscow and Nanking, and your respective attitudes, on those occasions, has firmly convinced me that neither of your Excellencies is by nature capable of adopting a rational or civilized attitude toward this question. It appears that neither of your Excellencies has any intention of abandoning your present war of mutual threats and blackmail until forced to do so by some overt act on the part of one or the other of your Excellencies' Governments, which would result in physical war of pan-Asiatic scope and magnitude. I am further convinced that this deplorable situation arises out of the megalomaniac ambitions of the Federal Governments of the UEESR and the UPREA, respectively, and that the different peoples of what you unblushingly call your "autonomous" republics have no ambitions except, on a rapidly diminishing order of probability, to live out their natural span of years in peace. Therefore:

I*n the name of ALLAH, the Merciful, the Compassionate: We, Shere Ali Abdallah, Ameer of Afghanistan, etc., do decree and command that the political entities known as the Union of East European Soviet Republics and the United Peoples' Republics of East Asia respectively are herewith abolished and dissolved into their constituent autonomous republics, each one of which shall hereafter enjoy complete sovereignty within its own borders as is right and proper.*

Now, in case either of you gentlemen feel inclined to laugh this off, let me remind you of the series of mysterious disappearances of some of the most noted scientists of both the UEESR and the UPREA, and let me advise your Excellencies that these scientists are now residents and subjects of the Kingdom of Afghanistan, and are here engaged in research and development work for my Government. These gentlemen were not abducted, as you gentlemen seem to believe; they came here of their own free will, and ask nothing better than to remain here, where they are treated with dignity and honor, given material rewards—riches, palaces, harems, retinues of servants, etc.—and are also free from the intellectual and ideological restraints which make life so intolerable in your respective countries to any man above the order of intelligence of a cretin. In return for these benefactions, these eminent scientists have developed, for my Government, certain weapons. For example:

1.) A nuclear-rocket guided missile, officially designated as the *Sword of Islam*, vastly superior to your Excellencies' respective guided missiles *Marxist Victory* and *Celestial Destroyer*. It should be; it was the product of the joint efforts of Dr. Voronoff and Dr. Bao Hu-Shin, whom your Excellencies know.

2.) A new type of radar-radio-electronic defense screen, which can not only

detect the approach of a guided missile, at any velocity whatever, but will automatically capture and redirect same. In case either of your Excellencies doubt this statement, you are invited to aim a rocket at some target in Afghanistan and see what happens.

3.) Both the UPREA mutated virus and the UEESR contagious sterility, with positive vaccines against the former and means of instrumental detection of the latter.

4.) A technique for initiating and controlling the Bethe carbon-hydrogen cycle. We are now using this as a source of heat for industrial and even domestic purposes, and we also have a carbon-hydrogen cycle bomb. Such a bomb, delivered by one of our *Sword of Islam* Mark IV's, was activated yesterday over the Northern tip of Nova Zembla, at an altitude of four miles. I am enclosing photographic reproductions of views of this test, televised to Kabul by an accompanying *Sword of Islam* Mark V observation rocket. I am informed that expeditions have been sent by both the UEESR and the UPREA to investigate; they should find some very interesting conditions. For one thing, they won't need their climbing equipment to get over the Nova Zembla Glacier; the Nova Zembla Glacier isn't there, any more.

5.) A lithium bomb. This has not been tested, yet. A lithium bomb is nothing for a country the size of Afghanistan to let off inside its own borders. We intend making a test with it within the next ten days, however If your Excellencies will designate a target, which must be at the center of an uninhabited area at least five hundred miles square, the test can be made in perfect safety. If not, I cannot answer the results; that will be in the hands of Allah, Who has ordained all things. No doubt Allah has ordained the destruction of either Moscow or Nanking; whichever city Allah has elected to erase, I will make it my personal responsibility to see to it that the other isn't slighted, either.

However, if your Excellencies decide to accede to my modest and reasonable demands, not later than one week from today, this test-launching will be cancelled as unnecessary. Of course, that would leave unsettled a bet I have made with Dr. Hong Foo—a star sapphire against his favorite Persian concubine—that the explosion of a lithium bomb will not initiate a chain reaction in the Earth's crust and so disintegrate this planet. This, of course, is a minor consideration, unworthy of Your notice.

Of course, I am aware that both your Excellencies have, in the past, fomented mutual jealousies and suspicions among the several "autonomous" republics under your respective jurisdictions, as an instrument of policy. If these peoples were, at this time, to receive full independence, the present inevitability of a pan-Asiatic war on a grand scale would be replaced only by the inevitability of a pan-Asiatic war by detail. Obviously, some single supra-national sovereignty is needed to maintain peace, and such a sovereignty should be established under some lead-

ership not hitherto associated with either the former UEESR or the former UPREA. I humbly offer myself as President of such a supra-national organization, counting as a matter of course upon the whole-hearted support and co-operation of both your Excellencies. It might be well if both your Excellencies were to come here to Kabul to confer with me on this subject at your very earliest convenience.

The Peace of Allah be upon both your Excellencies!

Shere Ali Abdallah, Ph.D., Sc.B., M.A.

From N. Y. Times, Oct. 30, 1984:

MOUZORGIN, SUN LI-YIN,

FETED AT KABUL

Confer With Ameer;

Discuss Peace Plans

Surprise Developments Seen....